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WORDS TO WIVES

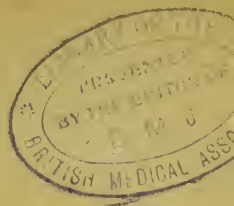
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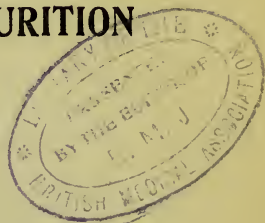
WORDS TO WIVES
ON
PREGNANCY AND PARTURITION



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ON

PREGNANCY AND PARTURITION



BY

S. BINGHAM

M.R.C.S. Eng.

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PREFACE

THERE are few medical men of large experience who have not found women too frequently betray a great lack of knowledge in regard to matters connected with childbearing, and that many a young woman is allowed to enter the married state and incur the natural consequence, uninformed as to the difficulties she may meet with, and without instruction wherewith to guide her in avoiding its various dangers. Launched on, what must be to her, an uncharted sea of matrimony it oftentimes seems as if it were left to chance whether she traverses it safely or is wrecked on the voyage.

Addressed principally to young married women and written in view of the fact that many of them come to confinement ill prepared for the struggle while not unfrequently they suffer afterwards from illnesses which might

have been avoided, the purport of this book is to provide such information as will enable these women to pass through the period of pregnancy with little disturbance to health and to look on the approach of motherhood with cheerful confidence.

Therefore in these pages the progress of pregnancy will be followed month by month with observations upon the various disturbances and changes which it produces, and advice given as to the management of health while in that condition.

An account is written of what may be expected to occur during an ordinary labour, from its commencement to the birth of the baby. To afford an explanation of the events that naturally arise in the course of a confinement as well as to point out the wonderful way in which Nature makes provision for such an occurrence, a short description of the principal organs and structures connected with child-bearing and parturition has been added.

The management of the lying-in period is mentioned, and brief notices given of the diseases that sometimes arise from the con-

finement, together with some remarks regarding infants.

The danger of incurring child-bed fever is one which besets every woman who bears a child, and the importance of the subject therefore entitles it to be fully explained and much space has been devoted to this purpose.

In the belief that much of the loss of life occurring year after year from this disease is due to a want of knowledge on the part of women as to its real nature and the circumstances connected with confinement which render them liable to its attacks, I have given a brief history of the discoveries that dispelled the mystery formerly surrounding this malady and have shown how they led to the finding out of a method of protecting women, giving birth to children, against its dangers. Attention is drawn to the favourable results that followed the employment of this method in public institutions, and an endeavour made to explain in a simple manner how this method can be used in the management of a confinement at a patient's own home.

To enable the reader to grasp more

thoroughly the principles on which the protective measures against this malady are founded, an account is given of the nature, habits, and the part they play in causing disease, of those wonderful little bodies known as germs or microbes.

The ordinary method adopted by surgeons before performing an operation to attain what is known as "Surgical Cleanliness" is described, and the description should be of some value in explaining what is meant by "antiseptic precautions," and what that faith is which has been so aptly termed "The Gospel of Cleanliness."

A simple or natural labour is referred to when the word confinement is used.

Throughout the writing of this book I have felt deeply indebted to those eminent men who, skilled in all matters connected with midwifery, have provided from their store of knowledge a well of wisdom from whose waters much of the information contained in these pages has been drawn.

S. BINGHAM.

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Words to Wives

INTRODUCTION

THE success attending the use of antiseptics in the lying-in hospitals and which had been maintained without interruption over a period of several years, naturally led to the assumption that their employment in the practice of midwifery was general throughout the country together with a consequent reduction in the number of deaths from child-bed fever ; great then was the surprise of those who had too readily formed this opinion and deep their disappointment when an investigation made, I believe for some purpose of insurance, left little room to doubt that no diminution in the annual loss of life from this disease had taken place. A reference to the yearly reports of the Registrar-General for England and Wales proved very clearly that in those two divisions of the kingdom the mortality from child-bed fever in that year, 1893, was practically the same as that of any one of the years since this disease had

been registered as a cause of death. In view of the fact that when control of the circumstances connected with a confinement was obtained in the manner that it is at a lying-in hospital, this disease was found to be a preventable one, the deaths from it occurring annually in England and Wales of some two thousand mothers, most of whom were between the ages of twenty and thirty-five—women in the full vigour and worth of their womanhood—became a serious matter to contemplate. This stimulated the making of fresh enquiries and a lamentable state of affairs in regard to the practice of midwifery was revealed. Numbers of women were attended by those whose ignorance was only equalled by their assurance, whose experience was simply a repetition of former errors and their race with death and disease left to that chance which, from their point of view, women who had children were expected to take and which their grandmothers had taken before them. Confinements were matters of common occurrence, and therefore it was to be expected that child-bed fever would follow at times. It had done so for centuries and, according to their way of reasoning, that was quite sufficient to explain why it should do so now. They did not know it could be prevented, and it is doubtful

if any assurance to that effect would make them believe so or alter their method of management. To find fault is easy, to apportion the blame justly is seldom so simple a matter. Those women who acted as midwives were probably of an order of merit quite on a level with the regard in which a confinement was held in the district where they practiced, and the service which a woman of this class rendered during the long hours of the night must in many cases have more than equalled the pittance of a fee which she received by way of remuneration. Both the midwives and the poor women they attended may be forgiven in not knowing better, for how could they be expected to understand that which they had never been taught. No community could afford to lose, year after year, a number of such valuable lives belonging to it as those of its child bearing women, nor with the knowledge gained from the experience of the lying-in hospitals that these women died of a preventable disease, maintain its self-respect if this loss of life were allowed to continue. Though the power given to the Sanitary Authorities enabled their Medical Officers of Health to adopt measures that prevented the spread of child-bed fever from a woman attacked by it, or from one who had

recently died of it, to other women, measures which doubtless saved many lives, for we no longer have outbreaks of this disease formerly so fatal, it was, apparently, too limited to enable these authorities to take those steps whereby the causes which gave rise to this disease in the first instance might be suppressed. The prevention of this annual loss of life from child-bed fever was a matter concerning the whole country and too general for local measures to deal with, and presented a problem of such magnitude as to require the assistance of the Legislature for its solution. In a paper read before the Epidemiological Society of London, March, 1896, entitled "Puerperal Mortality," the late Dr. W. Williams, M.O.H., Glamorgan, gave a very carefully considered and comprehensive review of the subject, and his observations must have been of great value to those who were trying to bring forward some practical measure that would prevent this waste of so many child bearing women's lives, a waste that Dr. Williams alluded to as "a dark, deep and continuous stream of mortality." His personal knowledge of some districts where poor women were delivered under such disadvantageous circumstances that as a consequence, apparently, child-bed fever was unusually frequent, gives an

additional value to the conclusions he arrived at, and gave weight to the opinions expressed in his paper, from the published report of which I have taken the liberty to introduce here some of the passages expressing his views as to the means which might be adopted for checking the occurrence of this disease.

“To bring about this diminution of mortality is a work in which several sections of the community must take part, such as,

The parturient women themselves, the midwife and medical attendant in particular, the Medical Officer of Health, Sanitary Inspector, and public bodies, such as Local Sanitary Authorities and County Councils and the Legislature.

“The utility of a recognised body of educated midwives, acquainted with the plain doctrines of health and capable of rendering suitable assistance during labour, would be incalculable to the community at large. Every wife and mother among the poor and artisan classes should be taught the elementary principles of nursing.

“There should be organised in all our large towns and industrial centres, classes for the purpose of imparting instruction as to the care of the sick, the pregnant and the parturient, and

for diffusing a knowledge of the primary laws of health."

"Young women about to become mothers require instruction and special care, for by leading a natural life in conformity with the laws of health, they often save both themselves and offspring."

"Again the establishment of lying-in institutions should be encouraged in these localities and the parturient poor induced to become inmates over their confinements. Many a time has my heart bled when called upon to attend them in the wretched hovels they have to live and die in."

Given in this detached manner, the force with which these recommendations appeal to the reader is necessarily less than that with which they appealed to the commonsense and humanity of his hearers, when given in connection with the mass of evidence Dr. Williams brought forward to show how great was the amount of preventable loss of life from this disease throughout the country, though it should be sufficient to awaken the sentiment that there is life to be saved by thousands and that this saving concerneth many.

Had Dr. Williams's suggestions been carried out within a year from the time (March, 1896,)

when they were first recommended, and the establishment of lying-in hospitals made general throughout the country, instead of being limited only to the localities referred to, these institutions taking the form of cottages or small houses according to the rural or urban nature of the district and the number of people dwelling in the neighbourhood, it is safe to assume that of the twenty-five thousand or more mothers who have perished of child-bed fever since that time, more than half would have been saved, the maiming for life of as many avoided, and in the saving of these child bearing women's lives there would have resulted an addition of many human beings to the community. It is only by bearing in mind the large number of deaths occurring from this disease throughout the country during a period of years and the fact that most of those deaths were preventable, that the significance of the death of one woman from it out of five hundred women who have been delivered can be properly appreciated.

Introduced to secure the better training of midwives and regulate their practice (thus limiting it to only one of Dr. Williams's recommendations). The Midwives' Act was passed in 1902, with its more stringent provisions to come into force in 1910. That it

will produce the results for which it was introduced no one will doubt, neither will any one question but that this Act has effected a very great improvement over the state of things formerly existing and for which, probably, it was the most practicable remedy. The days of mismanaged midwifery should depart with the disappearance of the old order of midwives, and a confinement come to be regarded with that consideration to which the bringing forth of a human being is entitled. The general effect of it must be productive of good and good which will be more apparent as time passes; not the least of its benefits being the diffusion of knowledge as to the importance of antiseptic cleanliness when dealing with a confinement, while at the same time the Act adds the weight of authority for the acceptance of such teaching. The excellent rules and regulations which The Central Midwives' Board requires midwives to observe are a teaching in themselves, and every midwife practicing under this Act becomes to all the women whom she attends in labour, virtually a preacher of The Gospel of Cleanliness these rules inculcate.

In Prussia, where more stringent regulations have been in force for some time, the annual mortality from child-bed fever has been reduced,

I believe, to one half of what it was formerly ; a result which justifies the looking forward to a similar reduction in this country after 1910. In England and Wales, during the year 1902, two thousand and three women died of this disease. Since then the number of deaths from this cause has been gradually diminishing year by year until in 1908 it was, in those two divisions of the kingdom, about fourteen hundred. In London there has been a considerable reduction, and this was noticed to have been brought about more particularly in the districts near to some maternity or lying-in institution. In 1908 the number of women who died of child-bed fever was only half that of former years, but gratifying as this must be, London contains such a large portion of the population of the kingdom that this local improvement makes the general improvement in the mortality from this disease appear in a less favourable light.

The midwives, both in London and Dublin, who are attached to some Maternity Institute, but attend women in confinement at their own homes, seldom have a death from child-bed fever to record. It may be that their connection with a Maternity Institute affords them many advantages, and while giving them

an assured position enables them to make more nursing visits and acquire a better control over the surrounding circumstances than those midwives who work independently are usually able to obtain ; neither would there be inducements for them to infringe in the slightest degree any of the regulations of The Central Midwives' Board. That infringements of these regulations will occur from time to time is only natural. I have known a midwife in good practice to attend a woman in labour the same day on the morning of which she had laid out the body of a man the cause of whose death was unknown to her, and visit shortly afterwards several other women whom she had previously confined. Other instances also might be related, and though a midwife can be punished in a manner which should deter her from repeating the offence, whatever injury results from a breach of these rules will necessarily fall upon the woman attended. No one with a knowledge of what midwives' midwifery was formerly, can over-praise the work of the supervisors under this Act. But it is obviously impossible, even if it were desirable, for a supervisor to watch over each confinement, though to many that might seem to be an occasion when supervision was most needed.

Offenders against these regulations will diminish in number as the working of The Midwives' Act brings a higher order of midwives into practice, and cheap but unsafe midwifery becomes regulated to the past. This Act was passed with the ultimate object, presumedly, of preventing deaths from child-bed fever to such an extent in the two divisions of the kingdom in which it operates that this disease would practically be banished from the lying-in room. But other countries have passed similar Acts having more stringent regulations or provisions than are contained in the one in force here, and have only succeeded in reducing their annual mortality from this disease of childbirth, as already mentioned, by one half; therefore it is doubtful if that very desirable object will be attained unless the working of this Act is assisted in every possible way by those sections of the community and the Public Authorities referred to by Dr. Williams in his paper. The difficulties medical men and midwives have to contend against, and the disadvantages under which they labour in attending confinements in private practice, are so much greater than are to be met with in lying-in hospitals, that to compare the results of midwifery in private practice to the discredit of doctors or midwives

with those of these institutions is obviously unjust, for, however skilful the medical man may be, and however well trained the midwife and nurse, they cannot control the circumstances surrounding their patient, nor close all the channels through which danger may be conveyed to her, and some uninformed person, friend, relative or even husband, may gain access to the lying-in chamber, and from their occupation or by their clothes or through some well meant but injurious act thwart all their efforts. The remarks of Dr. Victor Bonney, published in *The Clinical Journal* as recently as the 19th of August, 1908, illustrate very forcibly some of the difficulties that are occasionally to be met with. "Which of us," he said, "have not confined women in a room so filthy that the very odour of it on entering makes the stomach heave, where all the available water is contained within the compass of a small kettle, where the bed and body linen of the patient is brown with the exudations and exhalations of ages, and of which the bug and flea are the normal denizens?"

It is only a variation in the method of expressing what has been said several times by others, to remark that the more the disadvantages which midwives engaged in private

practice have to contend against are diminished, and the more closely the conditions surrounding a woman who gives birth to a child in her own home, are approximated to those surrounding women delivered in lying-in institutions, so much the more effective will the working of the Midwives' Act become. The French have a saying, I believe, that a pregnant woman is a sacred woman, and certainly the condition of pregnancy is one which gives a woman a great claim to the helpful consideration of her fellow women. If more women of leisure and possessed of means were to form associations or one association having several branches, having for its object the affording of every help and assistance to poor women in their confinements, many advantages might result, and such an association would probably become a potent factor in the prevention of child-bed fever, considerably ameliorating the conditions under which so many poor women have to be confined, and preventing at least such a concentration of disadvantages as those so vividly described by Dr. Victor Bonney.

The Medical Officer of Health of the district where there was a branch, would naturally sympathise with the object of such an association and no doubt be willing to give his friendly

help and counsel. Women who were expecting to be confined within a short time might be induced, by some acceptable means, to communicate the fact to some recognised member, thereby affording an opportunity of doing them useful service. Complete lying-in outfits might be provided and offered on loan to those pregnant women who were too poor to pay anything, and on hire, at a nominal charge for their use, to those who were better circumstanced. With these outfits, safe but suitable antiseptics with simple directions for their use could be sent, and a copy of the regulations of The Central Midwives Board that refer principally to the lying-in room might be enclosed. There does not appear to be sufficient reason why wives should not be taught the simple antiseptic precautions that are employed during labour for the prevention of child-bed fever, and a knowledge given to them of the rules midwives are required to observe when conducting a confinement. Provided with this information, though a wife might not know all about antiseptic cleanliness, she would be sufficiently acquainted with the subject to understand the importance of having clean confinements and, with the personal interest she would have in the matter, become, in a

question as to the exact date of its occurrence this uncertainty causes a difficulty in finding a satisfactory answer. As those connected with pregnancy are usually of some importance, though this may not be apparent at the time, an advantage will be found in making a note of the matter when it occurs, or shortly afterwards, rather than trust to the memory for any future reference to the subject. For the purpose of making such notes any ordinary calendar will do, or the memoranda pages provided at the end of this book may be made use of. When a doctor is being engaged to attend, he will naturally desire to know at about what time the confinement is expected, and to assure himself on this matter, will enquire the date of the first day when the last monthly period was seen, and for how many days this period continued, and the vague and indefinite answers that result from failing to remember this date are likely to be more misleading than helpful.

To have the baby arrive a month before it was expected, with nothing arranged for its advent, the husband away, the doctor out, and the nurse not to be found, is a serious disturbance to any household ; on the other hand, to anticipate a confinement a month before it is naturally due, may cause an annoyance that is more easy to

understand than to describe. One of the first notes to be made then should be the date of the first day on which the last monthly period commenced and that on which it ceased. At the time of making these notes memoranda might be made of the days in the nine or ten following months which correspond with the days on which menstruation would have regularly appeared, were pregnancy not present. It has been observed that on such days the womb appears to be more sensitive to disturbances, so it is an advantage to have something which will draw attention to the time when greater care is needed, moreover it is probable that pregnancy will be terminated on the tenth of these, that is the 280th day from the last monthly period.

Though the making of notes necessarily involves a little extra trouble at the time of doing so, this will be fully compensated for in the many advantages a reference to them afterwards affords. Medical men often find that women, both in pregnancy and at confinement, are apt to be careless about small matters, either because attention to them is troublesome or they are unable to understand that their neglect of them can have any serious consequence. Time after time is it brought home to such women that if

they had only taken a little extra trouble at the proper period a much greater trouble would have been prevented.

THE SECOND MONTH.

On some morning during this month and perhaps when getting out of bed rather quickly, a feeling of sickness may be experienced or actual vomiting take place, or only a little glairy fluid is brought up. This, on account of the time of its occurrence, is called "the morning sickness." It may commence in the first month, but generally arises in the third week of the second month of pregnancy. It is a well known trouble and two out of every three women suffer from it in their first pregnancy, and one out of every three in later pregnancies. The feeling of sickness may continue more or less up to mid-day, and while some women are much distressed by it, others, enjoying their meals as usual, appear to suffer little inconvenience. A cupful of hot water or, better still, hot milk, taken half-an-hour before rising in the morning will frequently afford relief. In getting up it is better not to rise suddenly but to do so gradually, even to partially dressing in bed ; in this

way, perhaps, much of the annoyance occasioned by simple morning sickness may be avoided.

Besides this other troubles, though of much less frequency, may arise such as a dribbling of saliva from the mouth, or a frequent desire to pass water ; for these perhaps a mild aperient or the omission of meat from the dietary for a few days may prove beneficial. Towards the end of this month the breasts become firmer and larger, the veins in the skin over them more distinct, and when handling them, small lumps will be felt here and there in their substance.

THE THIRD MONTH.

If now you gently squeeze the breast, a watery fluid flecked with what looks like little curds, may ooze from the nipple. The appearance of this fluid to a woman in her first pregnancy, is a significant sign of that condition, but to one who has had several children it becomes of less value, for a similar fluid may often be pressed from her breasts when she is not pregnant. As abortions, sometimes called mishaps, occur more frequently during this month than in any other of the nine, it will be as well to ascertain from the diary the day that corresponds with the one

on which the monthly period of this time would have commenced.

On that and the two or three days following, more than ordinary care, for the reason before stated, should be taken to avoid violent exertion, a long journey, or any form of excitement. If any pain is felt in the stomach or back, followed after an interval by the appearance of blood from the front passage, do not delay in sending for a doctor. Let the messenger take a note explaining to the doctor the kind of pain felt and what has been observed to follow it, the condition and month of pregnancy. This information will allow him to be better prepared for dealing with the disturbance when he arrives. In the meantime go to bed, keeping perfectly calm and as quiet as possible ; do not take any spirits, wine, nor hot liquids, such as tea, but if there is a desire to drink something, let this be a glass of cold milk or cold water. By these measures, perhaps, the abortion which was threatening may be averted, while a few days' rest in bed in allowing the irritable condition of the womb to subside may be all that is requisite for recovery. Whether this treatment of the disturbance will be sufficient can only be determined by a medical man, and as neglected abortions are common causes of future illnesses,

it will be necessary, however trifling the matter may appear to be at first, to call one in. See Disorders of Pregnancy.

THE FOURTH MONTH.

The changes occurring in the breasts will now be more evident and, as indicating some distension of the body from an increase in size of the womb, the depression of the navel becomes less marked. The morning sickness generally subsides in the second or the third week of this month and is usually followed by a return of the appetite, but if the sickness becomes persistent, increases and interferes with the taking of sufficient nourishment, then medical treatment will be required. About the fourth week of this month, more especially in first pregnancies, a curious sensation, described as a fluttering feeling or as if something inside the body were alive may be experienced and give rise, perhaps, to a feeling of sickness or faintness. This is known and spoken of as "the quickening." It may be felt earlier than this, while in women who have had several children it is frequently not noticed until the third week of the next

month, the middle of pregnancy, or even to within a few days of the birth of the child.

To a woman who has experienced this sensation in previous pregnancies, the quickening will leave little doubt as to her condition, but, contrary to a natural supposition, the statement that it has been felt cannot always be accepted as indicating pregnancy; for there are women who, having a strong desire for a child, become possessed with the idea that they are pregnant, and imagine they feel this sensation when there is nothing in their womb to give rise to it. The fact that the day on which it is first felt is so frequently that of the middle of pregnancy induces some women to take it as a date from which they can calculate when their confinement may be expected; but it is evident how misleading this method of estimating the date of confinement may become, and that it should only be employed when there is no better method available. If "the quickening" is felt a note may be made of the date, what the sensation was like, and whether it was accompanied by sickness.

THE FIFTH MONTH.

The second half of pregnancy commences in the third week of this month. The several signs that have appeared up to this time as indicating pregnancy have not much value when taken singly, but when taken together as they have followed each other, they afford good evidence of that condition being present. It may be useful to give here a summary or review of these in the order of their appearance.

- 1st Cessation of the monthly periods.
- 2nd Morning sickness.
- 3rd Enlargement of the breasts, changes in their colour around the nipple and the secretion of a little fluid.
- 4th Enlargement of the body, and quickening; further enlargement of the breasts.
- 5th The possibility of pregnancy and the absence of any other cause that would produce these changes.

Mistakes are frequently made in regard to pregnancy, and it may require the skill of a medical man to interpret such signs accurately.

THE SIXTH MONTH.

The movements of the child become more noticeable and may be felt by the hand placed upon the stomach. This practically makes the condition of pregnancy positive, and as it is so far advanced, consideration should be given to engaging someone to attend the prospective confinement. For the disturbances that may arise in this and the succeeding months see The Disorders of Pregnancy.

THE CARE OF HEALTH IN PREGNANCY.

There can be no doubt that it would be much better if all pregnant women were under medical care during the greater part of the time they are with child, but as it is at present, only the fortunate few can have the advantage of such supervision, while the larger number will be dependent for the management of their health upon what knowledge they may possess of the matter. Considering the importance of this subject to them it is surprising to find how few women there are who understand the reasoning on which it is based, and some who scarcely know if anything beyond ordinary care

is needed. This apparent indifference may be explained to some extent by the fact that through force of circumstances women frequently lead the kind of life which is admirably adapted for keeping them in good health during the time they are pregnant. The wife of a country cottager may be taken as an instance of a woman whose ordinary life is of this suitable character. Occupied by domestic duties that promote bodily vigour she generally subsists on a diet of simple but sufficient food, and passes her waking and sleeping hours in a comparatively pure atmosphere; and, happily for her, when she becomes pregnant, continues to follow her usual mode of life without any knowledge of it being the one which is most suitable for her condition, but simply because circumstances have led her to do so. When the eventful day arrives it will find her in good health and with firm strong muscles well able to meet the call about to be made upon them. Such women generally have short and easy labours and give birth to healthy well-formed children. They do not appreciate the need for any particular care of the health during pregnancy, neither are they likely to teach the importance of observing it to their daughters, consequently, as alluded to in the preface, many

a young wife finds herself in this condition, quite unprepared for the disturbances which it usually gives rise to and little knowing how easily she may jeopardise her life in doing some of the things which previously she had been accustomed to do with impunity. On the other hand, circumstances may so control a woman's life that she follows one which is not conducive to good health and therefore ill-adapted for her to continue with when pregnant. To such a woman a knowledge of what changes she should make in her way of living and how she may best counteract the disadvantages of her position becomes invaluable, for it may enable her to avoid a wearisome and lingering labour and also to give birth to a healthy child.

There are certain organs or structures belonging to us such as the heart, the lungs, the liver, the kidneys, the skin and the bowels, whose office is to be constantly engaged in keeping the body—to compare it to a piece of machinery—in working order, some by attending to the fires and some by removing the smoke, dirt and ashes, and we are dependent for our health and the welfare of our bodies on the more or less perfect way in which these organs carry out their several functions. As the efficiency of these organs is

of still greater importance to a woman when she becomes pregnant than it would be to her under ordinary circumstances, a brief description of what the work is which they have to do becomes justified.

The heart is a hollow muscular structure having two main divisions or cavities, known respectively as the right side and the left side. When the heart contracts it acts like a force pump and drives the blood contained in these cavities in directions regulated by valves, and that from the left side is sent into tubes called arteries. These from being large at first, divide, subdivide and send off branches until they become quite small and numerous, finally ending in almost imperceptible vessels termed capillaries, which permeate the tissues. The blood brought by the arteries to the capillaries is bright red in colour and has refreshing qualities. The walls of the capillaries are so thin and permeable that the tissues around are able to abstract from this bright red blood a something they needed, and give up to it a something they required to be rid of, a waste product. When the blood leaves the capillaries again and enters other tubes called veins on the return journey, it has lost the bright red colour which it possessed and become of a

dark red or purplish colour. In this condition it is brought to the *right* side of the heart from whence, when this organ contracts, it is sent to the lungs where it circulates in a way similar to that in which it circulated throughout the body. Here however it is subjected to a process, to be described presently, that causes it to become of a bright red colour again, and once more is brought back, this time to the *left* side of the heart, ready to repeat its journey through the arteries. The circulation is not so simple as this description would make it out to be, for the blood in passing through the various organs as well as the lungs, receives nourishing material from some, and is relieved of much of the waste matter it has collected, by others.

The lungs occupy, with the heart, nearly the whole space of the chest, and consist principally of a mass of very small cells into which the air we breathe can enter. The blood in circulating through the lungs comes to the walls of these cells, which are so thin and of such a nature as to allow of the air contained in the cell affecting this blood in a wonderful manner. It gives up to it some of its oxygen which the red corpuscles take, and at the same time some waste product is liberated from the blood and mixes as carbonic acid gas with the air which

we remove in breathing out from the lungs (expiration). The air we take into our lungs does not contain carbonic acid gas, but when we examine that which comes from the lungs this gas is found to be present. If we pass ordinary air through lime water the clear liquid remains unchanged, but if by means of a tube we blow our breath through the same, then the appearance of the liquid alters and soon becomes milky by reason of the carbonic acid gas of the breath combining with the lime in the water to form carbonate of lime or chalk, which is insoluble. This process of refreshing the blood is continually going on, and the amount of waste material or products removed from the blood in this way during the day cannot be inconsiderable for we breathe sixteen or eighteen times a minute, about a thousand times in the hour. It is obvious that the purer the air breathed the more effective will be this process. When many people occupy a small badly ventilated room they soon begin to feel uncomfortable or drowsy, for the air they have to breathe has lost some of its oxygen and contains an excess of carbonic acid gas. The liver is a large and important organ, and has received much undeserved abuse, greatly to the advantage of the vendors of quack medicines.

The size of this structure would alone indicate the important part its various functions must play in the economy, so to speak, of our bodies. With a circulation similar to but not so distinct from the general circulation as that of the lungs, it receives the blood coming from the digestive system, that is to say from the stomach and bowels, and subjects it to a process of elaboration which renders this blood more fit to serve the various requirements of the body. From this it may be understood how a too plentiful, rich and stimulating diet will throw an excess of work upon this organ. One of its duties is to take a part in maintaining the heat of the body and another to act as a sentinel or guard in preventing noxious matter, taken into the stomach or produced in the bowels by the action of bacteria, from gaining access to the system. In this it often fails from the amount of noxious matter to be restrained and suffers in consequence.

Few will dispute the fact that it is impossible to evolve something out of nothing, and therefore it should be quite easy to understand that we cannot possess a thought or move a limb without causing the expenditure of some material which the wonderful organisation of our bodies has provided for such and similar

purposes. In maintaining life we are constantly converting some material of our bodies into heat, force and energy, and this is as constantly attended by the production of certain substances known as waste products. These waste products are of no further use to us, and in fact are of such a nature that they would, if allowed to remain and accumulate in the system, speedily cause our death. We have observed that the lungs take some part in the removal of these products, but this duty devolves principally upon such structures as the kidneys, the skin and the bowels, which, on account of this special function of theirs, are frequently alluded to as the excretory organs. Of these the kidneys are the most important. We may hinder the action of the skin and bowels to some extent without much danger, but we cannot interfere with the function of the kidneys without seriously compromising the health.

It is probable that the liver and other tissues, cause the waste products after they are formed to combine with some of the saline constituents of the blood into a soluble salt that can be easily eliminated by the excretory organs. The kidneys, by the remarkable arrangement of their structure, possess the power of elimination to a great degree and are capable of

separating from the blood as it circulates freely through their substance, this soluble salt of waste products in comparatively large quantities and remove it in the form of a watery solution. This solution dribbles from them drop by drop as a saltish or saline liquid which, when it has been conveyed to the bladder, we recognise as the urine. The amount of urine passed in twenty-four hours and containing dissolved in it one and a half ounces of saline substances, is about two and a half pints, though it varies and sometimes this quantity is largely exceeded. It is by the quality of the urine rather than by the quantity, though of course this must be considered, that we determine whether the kidneys are acting efficiently.

The skin has several functions, but as an excretory structure its action is closely related to that of the kidneys, though the amount of noxious material so frequently alluded to as "waste products" removed by it is comparatively small. Its excretory work may be looked upon as being supplementary to that of the kidneys and when these organs begin to fail, through overwork or some other cause, advantage is often taken of the fact that the skin can be of assistance to them by inducing it to perspire freely. The ordinary perspiration

which passes off unperceived amounts in the course of the day to two pints, and has a regulating effect on the heat of the body. The bowel possesses the power besides that of removing the rejected or undigested material passed down to it from the stomach, of acting as an excretory structure, by which it becomes a co-worker with the skin and the kidneys. This power may be much increased by provoking the bowel to greater activity by an aperient, or it may be completely annulled and more work thrown on the other excretories by allowing constipation to continue.

Pregnancy imposes an additional amount of work on these organs, and this becomes more and more evident as it advances towards its termination. In the later months of this condition a woman will find her appetite increase, that she breathes more rapidly, readily perspires, passes water more frequently and in greater quantity. From the short account which has been given of the excretory organs and their functions, it should be quite easy to gather the fact that there must be a limit to the amount of work they are capable of doing, and to understand how, as pregnancy progresses, and throws a gradually increasing burden of work upon them, that this limit will be more and more

encroached upon and so reduced that care has to be exercised lest at any time these organs become overtaxed and fail in their duty of removing all the waste products that are formed. The management of the health in pregnancy consists in exercising this care, and to help these organs in their work as far as possible by wearing suitable clothing, taking proper food, pure air and exercise, and avoiding any excesses.

DRESS.

As warmth and the action of the skin must be properly maintained, the dress should be made to fit loosely so that the pressure of it does not interfere with the circulation; undergarments should be suspended from the shoulders and not supported from the waist, and to prevent chilling of the skin, the under-clothing should be of some woollen material; warm stockings kept up by suspenders, not by tight garters, and the boots a size too large rather than one too small. The sooner corsets can be discarded the better; they are the cause doubtless of much of the constipation that troubles so many women, and by hindering the movements of the

back and body prevent their muscles gaining power and tone. As a substitute for them a broad supporting band or belt may be so arranged that it tends to lift the abdomen upwards and this often gives much comfort in the later months of pregnancy. As the abdomen becomes crowded by the growth of the child any tightness of garment around the waist interferes with the circulation through the liver and may induce piles and varicose veins.

DIET.

The considerations to be kept in view are the suitable nourishment of the mother and her unborn babe without throwing too much work upon the liver; to assist the action of the bowels, and to avoid irritating the kidneys or interfering with their function. In selecting meats, choose those that are most easily digested: mutton in preference to beef, and beef to pork, bacon not too lean, no sausages nor pork pies. Fresh meat should not be taken more than once a day, or every other day alternated with fish, an excess affects both the liver and the kidneys, hence strict dietarians advocate a non-meat diet. The morning bacon

can be alternated by a soft boiled egg. A large basin of good milk porridge is an excellent way of starting the day ; while a basin of bread and milk taken at night tends to promote sleep. Both tea and coffee should be weak and taken at the usual time. It will be well to take a glass of milk between the morning and mid-day meals. Various vegetables, such as cabbages, cauliflowers, and spinach can be taken but they should be fresh ; beans and peas cannot be too tender ; potatoes should be eaten of sparingly ; but sound fresh fruit may be taken with advantage. Instead of pastry, stewed fruit, such as figs, prunes, apples and pears, may be taken with milk. Bread and butter is nourishing food, and whole meal bread better than white. Of all the nourishing foods, milk, either by itself or in the form of milk puddings, is the best. With plenty of milk it would be easy to do without meat of any kind, while to satisfy the thirst of pregnancy nothing is better than water, and it may be partaken of freely either as it is or in the form of barley water. One or two glasses taken the first thing in the morning will often cause an action of the bowels.

REST DAYS.

On those days of each month that correspond to the days on which the poorly time or monthly period would have been seen, the womb, for some reason of habit, becomes more sensitive to disturbances, so that care should be taken on such days to avoid excitement of any kind, too much exercise or a long journey.

ALCOHOL IN PREGNANCY.

Alcohol, whether it is in the form of nursing stout, beer, wine or spirits, should be avoided. Compared with its cost it has little food value and may produce serious mischief. At no time in a woman's life can she so readily become a victim to the alcohol habit as in that of pregnancy, and at no time can it be more injurious to her. If it affects her mature and fully developed organs, how much more then must it affect and injure the newly formed and delicate structures of the babe within her womb. Such babes, if born alive, are born to a heritage of misery and are often found to be the subjects of fits and to possess an irritable nervous system. In an asylum (Bicetre) forty-one per cent. of the idiot and imbecile children were found to have

had drunken parents. Plato was so impressed with the fact that drunkards beget drunkards, that he forbade the newly married to drink wine. In "The Drink Problem," edited by T. N. Kelynack, The Right Honourable John Burns, M.P., remarks "bad though liquor is to the child, penalising as it is to the father, alcohol in the mother is one of the most serious tragedies that society is confronted with. It not only produces sterility, abortion, and premature still birth, but what is more pathetic to me, debility in the children who survive alcoholic impregnation." There is the poignant tragedy of the "might have been" blighted by maternal indiscretion ere active life had come. At the meeting of the International Congress on Alcoholism held in London, July, 1909, it was remarked that more than three times the number of idiots were born to the parents who were drunkards than to those parents who took no alcohol. That in some parts of Germany where vines grew plentifully, there were many congenital idiots, and it was observed that after a prosperous wine year, there was a marked increase in the number of children born with this mental affliction, *vide* "The Daily Telegraph," 22nd July, 1909. To those women who are interested in this subject, and as mothers of

the race all women ought to be, I would strongly recommend the reading of "The Drink Problem" by T. N. Kelynack, and especially Dr. Mary Scharlieb's contribution to it entitled "Alcohol in relation to women and children."

EXERCISE.

This is required to improve the circulation and prevent the muscles from becoming weak and flabby; it should not be too violent nor excessive. Walking is the best form of exercise because it is generally taken out of doors, where there is fresh air. Those who are living in a town can drive out and then take a walk in the purer air. The lifting of heavy weights should be avoided. Women who take too much food and too little exercise may have big babies, but they also may have big labours.

SLEEP AND REST.

Both these are necessary, and an endeavour should be made to secure at least eight hours of unbroken sleep during the night and another

hour during the day. The room should be well ventilated any time and all crowded rooms, such as theatres or places of entertainment, be avoided.

THE CARE OF THE BREASTS.

This is a matter of no small importance, as much of the comfort of the mother and the welfare of the baby depend upon it. Pressure of the corsets will sometimes prevent the nipples attaining a sufficient length for the baby to hold them between its lips. If the nipples are small, squat or flat, an endeavour should be made about the sixth month of pregnancy to lengthen them. At this month there is usually a slight oozing from the nipples which on drying may form an irritating crust. This crust can be washed off with warm water or water to which a little borax has been added and ordinary soap, carefully drying the nipples. A little boracic ointment should then be applied, gently drawing them out by the fingers and thumb for a few times daily, and protecting them afterwards with cotton wool or an old pocket handkerchief. In this way they may be elongated and made soft and supple ; later, or

when the child is born, a little eau-de-cologne or weak spirit may be needed to slightly harden them.

BATHING.

The object of this is to promote the action of the skin and keep it clean and healthy. Wash the body all over, and in the later months particularly the lower parts of the body, using warm water and good household soap, and thoroughly drying the skin afterwards by means of a fairly rough towel. This should be done twice or three times a week. A warm bath at night and a glass of hot milk taken afterwards will often be followed by a good night's rest.

CONCERNING SOME OF THE STRUCTURES CONNECTED WITH CHILD-BIRTH

In the lower portion of the body there is a large circular framework of bone that, tilted forwards, forms a kind of arch on the keystone of which rests the spinal column or backbone. On passing the hands from behind this, forwards, the upper edges of its sides (the haunch

bones) can be traced for some distance until they abruptly dip down and too deeply to be followed in this way, but if the hands are passed still further forwards coming together low down on the front of the body, they will meet over the bone where the sides join in completing the circle. In the sitting attitude, we rest on portions of the lower edges of its sides and their position and distance from the upper ones show how deep the sides of this structure are here, and how basin-like the whole of this framework of bone must appear. It is the resemblance of it to that familiar piece of crockery which causes medical men, when speaking of this bone to use the word "pelvis," meaning a basin, "the pelvis is roomy or the pelvis is contracted" as the case may be. Elsewhere I have used the words "a well-formed woman," and the expression was in reference to this pelvis or circle of bone.

As nearly the whole length of the canal through which the child has to pass at birth, is surrounded by this hard unyielding structure, much of the ease or difficulty of labour will therefore depend on its size and shape. This fact is well known and to it may be attributed the reason why some people look upon a first confinement as, to make use of their own

expression, a "testing of the woman." A deformity of the pelvis is usually the result of a well-known disease of early life, namely "Rickets." This common disease of childhood, from which nearly all bottle fed infants are apt to suffer, renders the bones soft and consequently those which bear the weight of the body liable to bend and get out of shape. If that girdle of bone which has just been described becomes softened, the pressure upon it produced by the weight of the body from above, through the backbone against that produced at the sides by the thigh bones, may so distort it that the birth canal becomes flattened or contracted. Unless this bone recovers its shape and develops to proper dimensions, when the girl grows up to womanhood, the condition of it may prove a source of much difficulty when she comes to the bearing of children.

Though difficulties at confinements arising from deformities of this bone are not so frequently met with as might be anticipated, it will be just as well for an expectant mother who knows that she suffered from Rickets in childhood, to mention the matter to her doctor when engaging him to attend her. The womb, before impregnation, is a small pear-shaped

body about three inches long and two ounces in weight, attached to and seemingly poised on the inner end of the front passage which it closes or occupies, but after impregnation it commences to enlarge and this small, firm body increases to such an extent that by the end of the ninth month of pregnancy it has become a large hollow, strong-walled, muscular structure, weighing sixteen ounces or more, and some estimate of its size may be formed from the fact that it contains the infant which will probably weigh, at full term, six or seven pounds. The muscular character of its walls enables this hollow body to contract forcibly on itself so as to squeeze out whatever it may contain ; and it is by a series of such contractions at the time of confinement that the baby is eventually delivered.

Lining the inside of its walls, excepting where the afterbirth is attached and there passing over that structure, is a thin membranous closed sack or bag containing some watery fluid which, at the time of confinement, may amount to as much as one or two pints though, the quantity of it varies and is sometimes considerable. This forms an admirable arrangement for securing the safety of the child. Indeed, the further we pry into the secrets of

Nature so much the more do we discover how marvellous are her methods, for, surrounded by this watery fluid, the child is shielded as by a water cushion against being injured by a blow or by any sudden movement of its mother, such as a fall. This arrangement also permits of the child moving to some extent and probably it is to some such movement that the sensation of quickening is due. Generally during some part of the labour this bag is broken when the watery fluid escapes, coming away sometimes by such a sudden gush as to alarm the woman if she is not prepared for it or does not understand what it means. The fluid is usually referred to as "the waters," and the common saying in regard to its escape is "the waters have burst." The bag itself comes away with the afterbirth to which it is attached, and is spoken of as "the membranes."

Occasionally it remains intact throughout the whole of labour, and coming away unbroken still encloses the child when birth takes place. It used to be said of a child whose birth was of this character, that it was "born with a caul," and such a way of entering the world was supposed by the ignorant and superstitious to ensure against death by drowning; but the child in its attempts to breathe may drown there and then

unless quickly liberated by tearing the bag open. Imprisoned in the womb as in a cell and seemingly still further isolated by a moat of water, it is not apparent at first how the child can receive nourishment from its mother, so that the provision which has been made for this forms another illustration of the wonderful ways of Nature. Of variable length, but, usually at the end of pregnancy to which period this description refers, that of twenty-two inches, there projects from the child's abdomen a long cord, the navel string or umbilical cord, which, consisting principally of a jelly-like substance enclosing some blood vessels that enter it from the child's body, extends to the wall of the womb and there spreads out under the membrane just mentioned into a large sponge-like fleshy structure, similar in shape to a big round or oval flat cake having a width of six inches and weighing about a pound. This is the afterbirth or, as medical men generally term it, "the placenta," and is attached to the wall of the womb covering about a quarter of its inner surface. It was placed there of course infinitely smaller, at the commencement of the child's existence, the beginning of pregnancy, and has enlarged with the increase in size of the child. The supply of blood to the

site of the afterbirth is greater than to other parts of the womb, and naturally increases as pregnancy advances to an extent corresponding with the growth of the child ; and as this growth becomes more and more rapid towards the end of pregnancy, by the time of labour the amount of blood sent to this part of the womb will be considerable, a fact that is unfortunately made only too evident by the flooding which sometimes follows a confinement. In this manner a quantity of the mother's blood is constantly being brought into contact with the afterbirth and into close relationship with the child's blood circulating through that structure. It has been pointed out elsewhere that the tissues can abstract from the blood such material as they may require and give up to it that which becomes the so-called "waste products." Now the placenta or afterbirth possesses a similar power to the tissues in this respect though apparently in a more special form, for not only can it take material from the mother's blood for its own needs, but abstract from it that which is required to maintain the life of the child within the womb and to promote the growth of its body. The blood of the child receives this material, which has to build up such various tissues as bone, brain and muscle, from the

placenta and carries it by a vessel of the cord to the child's body, while other vessels of the cord bring to the placenta certain material from the child which it passes on to the mother for her to remove as waste products by her excretory organs in the manner already mentioned. This is a very imperfect description of that wonderful process by which the afterbirth acts as a medium of exchange between the mother and her unborn babe, but it should be sufficient to show the use and nature of that structure. When the afterbirth is shed, the walls of the womb by reason of their muscular nature, contract and close the vessels that brought blood so freely to its site.

To supply the material required by the enlargement of the womb and for the growth of the child must be no small tax on the blood of the parent, and no doubt this does affect it to some extent. It is said that a woman's bones become more fragile during pregnancy and when broken to unite less readily.

THE SEVENTH AND EIGHTH MONTHS OF PREGNANCY.

There is little to observe as specially belonging to either of these two months beyond that already

alluded to under the headings of "The Disorders of Pregnancy" and "The Care of Health in Pregnancy." Abortions become somewhat more frequent again in the seventh month, and to avoid them the same care as during the third must be exercised. The increase in size of the child will make some of the troubles due to the overcrowding of the body, such as the frequent passing of water, more pronounced, and naturally cause a woman to look forward to the time when she will be relieved of her burden. But whether she will view the approach of her confinement with confidence or be filled with anxiety depends very much upon the amount of knowledge she possesses both of the dangers attendant on labour and of the means by which such dangers can be avoided. Few women escape the influence of the old time saying to which Dr. Garrigues alludes. He writes: "Thanks to antiseptic midwifery the times are no longer when a woman knew she ran considerable risk of her life in giving birth to a baby, although she may have been taught from childhood 'In sorrow shalt thou bring forth children.'" Confidence though ought to be established by his previous comment as well as by the following remarks of the late Dr. Peter Horrocks: "Take natural labour, it cannot be

too strongly enforced that in more than ninety per cent. of all cases of labour everything, will go on well if the woman is not interfered with but allowed to complete what, after all, is simply a physiological (natural) act. All that is required is *surgical cleanliness* on the part of both *patient* and *attendant*."

Opinions to the same effect, which have been expressed by many other eminent obstetric physicians, could have been given.

Better by far would it be for a woman to endure a difficult labour with the protection afforded by the use of antiseptic measures, than it would be for her to have an easy and simple one at which the use of these measures had been omitted. And it is to such an omission as this, leaving her helpless babe to the care of strangers, that many a young healthy woman after an ordinary and natural labour and in all the joy and promise of a first motherhood, has lost her life. The death that occurs in these distressing circumstances is generally due to the woman being attacked by child-bed fever, and though ninety labours out of a hundred are natural or simple, not one is a safe labour unless this disease, practically its only danger, is properly guarded against. This danger and the methods to be taken by which it can be avoided,

become then matters of great importance to every child-bearing woman, and as statements and observations are more convincing and more readily accepted when the grounds on which they are based can be clearly pointed out, a brief commentary on child-bed fever has been given together with an account of the various discoveries that led to a means being devised of protecting women against this peril of childbirth.

CONCERNING CHILD-BED FEVER AND THE DISCOVERIES THAT LED TO ITS PREVENTION.

It is obvious from the knowledge which we now possess of child-bed fever that it must have been of as much danger to the woman who first gave birth to a babe as it has been to the number of women who have borne children since that time throughout all parts of the world. Attacking a woman recently confined, regardless of her condition of health, her position in life or the character of her labour, this disease during the centuries which have passed has desolated millions of homes and caused an amount of misery and domestic unhappiness beyond description. While many looked upon the occurrence of this malady as a manifestation of

the will of a higher power, there were others who would not accept this view of the matter feeling that it was not right to attribute to Providence the occurrence of a dire disease simply because the reason of its onset could not be explained, moreover they had observed that this disease was, in some respects, similar to many other diseases, and maintained that, though mysterious, it was mysterious only because it was not sufficiently understood.

The nature of child-bed fever was not recognised until nearly the middle of the nineteenth century, but many more years elapsed before the knowledge regarding its origin became sufficiently precise to allow a means of protecting women against its attacks being established. Attention had been frequently drawn to one feature in connection with it in that it seemed to follow the footsteps of certain doctors and midwives, and a careful consideration of the matter left little doubt but what they conveyed the infection of this disease from one woman to other women whom they attended shortly afterwards. Further proof of its contagiousness was provided by the fact that when a woman was attacked by it in a building where several other women had been recently delivered, many of these women

became infected. So frequent was this result and attended by such disastrous consequences that it led to many lying-in institutions being closed. Notwithstanding the accumulation of evidence proving its dangerous nature, sufficient regard was not paid to this characteristic of child-bed fever until the late Dr. Oliver Wendell Holmes of Boston, U.S.A., drew special attention to it by a paper which he read before The Boston Society for Medical Improvement, in 1842, entitled "The Contagiousness of Child-bed Fever." Some there were who would not listen to Dr. Holmes's views, but stubbornly held to the opinion they had formed, that these deaths were due either to accident or to Providence. Referring these objectors to the convincing proofs that were to be found in the Medical Journals, Dr. Holmes remarked, in a manner that was very characteristic, "I quarrel with no man over the counterpane that covers a mother and her babe." In the following eloquent appeal with which he concluded his paper, he seems to have urged his hearers to consider the great responsibility they incurred in refusing to recognise the facts he had brought forward.

"It is as a lesson, rather than a reproach,

that I call up the memory of these irreparable wrongs and errors. No tongue can tell the heart-breaking calamities they have caused. They have closed the eyes, just opened upon a new world of life and happiness, they have bowed the strength of manhood into the dust, they have cast the helplessness of infancy into the stranger's arms, or bequeathed it, with less cruelty, the death of its dying parent. There is no tone too deep for record, and no voice loud enough for warning. The woman about to become a mother, or with her new born infant upon her bosom, should be the object of trembling care and sympathy, wherever she bears her tender burden, or stretches her aching limbs. The very outcast of the street has pity upon her sister when the seal of promised maternity is impressed upon her. The remorseless vengeance of the law, brought down upon its victims by a machinery sure as destiny, is arrested in its fall, at a word, which reveals her transient claims for mercy. The solemn prayer of the liturgy singles out her sorrows, from the multiplied trials of life, to plead for her, in her hour of trial. God forbid that any to which she trusts her life, doubly precious at that eventful period, should regard it negligently, unadvisedly, or selfishly."

THE DISCOVERY OF THE NATURE OF CHILD-BED FEVER.

In 1847, that is some five years after Dr. Holmes had drawn special attention to its contagious character, Dr. Ignaz Phillip Semmelweiss discovered the nature of child-bed fever. While many women may have heard of Dr. Holmes on account of his literary reputation, there are few who know anything of this young Hungarian professor, and yet, probably to no man who has lived do women owe a deeper debt of gratitude. Full of sympathy for suffering and endowed with a power, far above that of his compeers, of quickly perceiving a logical inference, Semmelweiss was the first one who brought light to bear on the nature of a disease which had darkened so many households, and so often turned the few days' joy of motherhood into a tragedy of death. Attached to the lying-in hospital at Vienna as one of its physicians, warm-heated, enthusiastic, and of a highly sensitive nature, Semmelweiss was appalled at the number of deaths from child-bed fever among the poor women who were delivered there. It is said that every day priests administered the last consolations of religion in the wards, the fact being notified by the

ringing of bells. "I myself was terror stricken," says Semmelweiss, "when I heard the sound of the bells at my door; a deep sigh rose in my breast, for the unfortunate mother who was a victim to a disease, the cause of which was unknown.

"This worked upon me as a fresh incentive that I should, to the best of my ability, endeavour to discover the mysterious agent." Then he visited various lying-in institutions throughout Europe and found that their inmates were equally unfortunate as those in his own hospital. On his return to Vienna, he learnt of the death of a medical friend who had injured himself in making a post-mortem examination and allowed some decomposing matter to get into the wound, causing death. Semmelweiss was struck with the great similarity between the symptoms recorded of his friend's illness and those he was familiar with in the illnesses of the poor women whose deaths caused him so much distress. Of this he says, "Day and night the vision of my friend's malady haunted me, and with ever increasing conviction I recognised the identity of the disease from which my friend died with the malady I had observed to carry off so many lying-in women." That in fact they were identical diseases passing

under different names. Recently confined women were wounded women, and those who died of child-bed fever died as his friend died, because some deleterious matter had got into their wounds.

He at once gave instructions that no woman in labour should be examined until the persons about to examine her had first washed their hands and then soaked them in a mixture of chloride-of-lime and water. A marked decrease in the number of deaths followed the adoption of this method of cleaning the hands before making an examination, and where previously ten deaths had occurred, in proportion only one now took place. Such is the first well recorded use of antiseptic precautions in midwifery.

Full of enthusiasm, Semmelweiss tried to impress upon everyone the importance of his discovery, and his ardent nature could ill brook the opposition of those who differed from him. Unfortunately for him and one may fairly say, for all mankind, the existence of putrefactive germs was not known at that time, and having in his mind the women who died in his wards, he thought that the disease was due to something connected with those who worked in a hospital. Though nothing could exceed the importance of his discovery that child-bed fever

was of the nature of blood poisoning, nor that of showing how this blood poisoning was produced and the means by which it might be prevented, Semmelweiss was unable to explain to his opponents why women who were attended by midwives in their own homes died of it. All he could say in answer—but this inclusive was a very large one and the answer remains a great practical truth up to the present time, “that it was conveyed by the examining finger.” Broken-hearted, he lost his life and died at Vienna in 1865, aged 47. It is a singular fact that the cause of his death was blood poisoning received in operating on a little child.

At his birthplace, Buda Pest, a beautiful statue has been erected towards which both rich and poor subscribed. It was unveiled in September, 1906, when the President of the Executive Committee, Professor Teuffer, said, that the idea was to immortalise the memory of Semmelweiss, in order to give a visible token and expression of the debt due to the founder of the antiseptic treatment, and the discoverer of the etiology (cause) of puerperal (child-bed) fever.

The statue is of white marble. Semmelweiss is represented as standing on a pedestal, which

is surrounded by naked figures of children, supporting a wreath, while on the base a woman is sitting with an infant on her knee, looking up into the face of the statue with an expression of deep gratitude.

THE DISCOVERY OF THE CAUSE OF CHILD-BED FEVER.

The discovery by Semmelweiss that child-bed fever was the same disease as blood poisoning and produced by something getting into the wounds of a woman recently confined, still required the finding out what that "something" was and why, when it got into a wound, it should set up blood poisoning, before the mystery of this malady could be completely removed; and this in 1862 Louis Pasteur, by his remarkable researches on the nature of germs, succeeded in doing.

Louis Pasteur, an eminent Frenchman, whose name is borne by the Pasteur Institute, an institution established in Paris for the investigation of hydrophobia and other diseases, proved that the souring of milk was produced by minute rod-like bodies (germs) and not by a chemical change. He separated these bodies

from some milk that had turned sour and transferred them to other milk and caused this also to become sour. He also found out that there were many other kinds of germs besides those that caused the souring of milk or lactic fermentation, and that some of these produced changes in sweet liquids resulting in wine and beer being formed, while others when introduced into the bodies of animals, gave rise to various diseases, generally of an infectious or contagious nature; that one kind of germ in particular, which has come to be known as the putrefactive germ, produced blood poisoning when, through some wound or other injury, it gained access to the tissues of the body. Pasteur conclusively proved the presence of this putrefactive germ in the body of a woman who had recently died of child-bed fever. He possessed the power of going to the point at issue in any question, and once at a meeting of doctors in Paris who were discussing the cause of child-bed fever, Pasteur (though not a doctor himself) got up and went over to a blackboard that was in the room and, with a piece of chalk, drew upon it a figure that looked like a chain or series of little beads strung together; and much to the astonishment of all who were present, said

pointing to his drawing (which was intended to represent the appearance of the putrefactive germ as seen under the microscope), "That is the cause of child-bed fever."

In 1863 Pasteur was seen by Napoleon III. "I assured the Emperor," said he, "that all my ambition was to arrive at the knowledge of the causes of putrid and contagious diseases." It has been said of Pasteur that by his researches in the causation of disease, he saved more human lives in the course of one year than Napoleon Bonaparte destroyed in all his wars. Mr. and Mrs. Frankland write, "Pasteur viewed with special satisfaction and pride the outcome of his researches that led Lister to revolutionise the practice of surgery by introducing the antiseptic and aseptic treatment of wounds." Lister sent him his warm thanks for having by "your brilliant researches demonstrated the truth of the theory of putrefactive germs, and having thus given me the only principle which could lead to the success of the system of antiseptics." At Pasteur's Jubilee, Lord Lister said, "Truly there does not exist in the entire world any individual to whom the medical sciences owe more than they do to you." Pasteur, who was born in 1822 and died in 1895, lived

long enough to enjoy witnessing the great advantages his many discoveries had conferred upon the community in general. "They immortalise the dust of him whose patience proved more wise to save than death to slay."

LORD LISTER'S DISCOVERY.

While Pasteur was making his remarkable discoveries, Lord Lister, then a surgeon at Glasgow University, was trying to solve the mystery of blood poisoning. Blood poisoning is a disease, as doubtless many know, that frequently follows when wounds have been infected by something injurious, and in the surgical wards of hospitals has a tendency to travel or spread from one patient affected by it to others there. It used to be a source of great anxiety to operating surgeons lest it should attack the wounds necessarily made by them in the course of an operation. Formerly this sometimes occurred and patients died, not from the operation, which might have been a small and simple one, but from the germ of putrefaction gaining access to the wounds and so setting up this fatal disease. When Lord Lister heard of Pasteur's researches, and

his discovery that the air contained putrefactive germs, he at once saw, that if these germs could be prevented from gaining access to wounds, so also would blood poisoning be prevented. He found that carbolic acid would kill putrefactive germs, and devised various ways of applying solutions of it to wounds so that, while they were not injured by the acid, it protected them against any invasion of these dangerous little bodies. Lord Lister brought his great discovery to general notice about the year 1864, and afterwards it came to be known throughout the world as "Lister's Antiseptic treatment." Since the time of Lord Lister's discovery however, the habits of germs have come to be better understood, and that of clinging to various articles, such as the skin, hands, fingers, clothes, dressings and instruments is one which may cause these, when they come into contact with a wound, to be a greater source of danger in conveying germs to it than the air or atmosphere to which the wound is exposed at the time of operation. This in no way affected the principles of Lord Lister's discovery which have been maintained up to the present time, though the methods of employing his "Antiseptic treatment" are similar to those

described under the heading of "Surgical Cleanliness."

It was after the success of this antiseptic treatment in preventing dangerous germs getting into wounds, that Semmelweiss's discovery of child-bed fever being the same thing as blood poisoning, and Pasteur's that the putrefactive germ was the principal cause of it, began to bear fruit, and a method, embodying the principles of Lord Lister's antiseptic treatment of wounds, but adapted to the conditions attendant at a confinement, was employed to prevent this or other dangerous germs gaining access to the wounds which a woman receives at childbirth. This method came into use about 1870, and with so satisfactory a result, that many lying-in institutions which were about to be closed on account of the great loss of life from child-bed fever, adopted it; and whereas these institutions were once dangerous places, and women were said to shudder as they passed through their portals, they have now become the safest wherein a woman can be confined.

ANTISEPTICS IN MIDWIFERY.

The introduction of antiseptics into the practice of midwifery may truly be described as one of

the most important of the measures for lessening suffering and the saving of human life, that marked the progress of the 19th century. So remarkably successful has their use in modern midwifery become, that at the present time, wherever circumstances permit, their employment assures any healthy well-formed woman, about to be confined, that she need have neither fear nor anxiety as to the result, but may look forward with cheerful confidence to a happy issue out of the event; and even where the conditions of deformity are such that complications may be anticipated, they will still exert their great protective power against child-bed fever. In all public lying-in hospitals and maternities, the protection afforded by the antiseptic method is so highly valued that it has come to be the only one which the authorities of these institutions, in this or other countries, will sanction. No more convincing testimony as to its advantages could be desired than the similarity in the reports of these lying-in institutions. Any doubt remaining as to which was the right way, the way a woman would wish her confinement conducted, ought to be at once removed on reading the following extracts from Dr. Boxall's paper on "Mortality in Childbirth," read before The Obstetrical Society of London

in May 1905, and referring principally to The York Road Lying-in Hospital, London. "The so-called epidemics of puerperal (child-bed) fever were of frequent occurrence and the mortality from this cause, always considerable, at times became appalling. In 1877 for instance, out of sixty-three patients delivered, nine died. In consequence it was decided to close the hospital. In October 1879, the hospital was re-opened, and a committee composed of the visiting staff, presided over by Lord Lister, drew up a set of antiseptic rules (here tables were shown). It will be observed that for the last sixteen years (1889-1905) or more, among 8,373 confinements, no death from sepsis (that is blood poisoning) has taken place when the case has been dealt with throughout in hospital." Four patients who had not been dealt with in the hospital throughout their confinements, but had been repeatedly examined before admission, died. They were difficult cases and unsuccessful attempts to deliver them had been made, presumably without any antiseptic precautions having been taken, so that probably putrefactive germs had gained admission to their persons before they entered the institution. Though these four women succumbed to child-bed fever, the disease was not, as would formerly

have been the case, conveyed to any of the other inmates. Dr. Boxall went on to say, "I look upon this as an important fact, for these women were attended by the same (hospital) midwives and nurses and occupied the same labour wards and lying-in wards in close proximity to other patients, yet the disease *failed to spread*. A sure indication to my mind of the efficacy of the routine measures adopted to prevent the spread of infection, and the most convincing proof that puerperal sepsis is essentially a preventable disease." Further on he remarked, "I am aware that such results have been equalled in other hospitals." That such is the case is borne out by a paragraph which appeared in "The British Medical Journal," 3rd August, 1907, stating that in Professor von Herff's hospital at Basle, 6,000 confinements had taken place with out a death from child-bed fever. Thus we notice that in an institution where formerly numbers of women died of child-bed fever, a confinement had taken place every day for upwards of sixteen years and not one was followed by death from this disease.

This wonderful protection to women bringing forth children, has been effected neither by change of building, nor in increased skill of attendance, nor in the class of patients

admitted, but by the adoption of the principles of antiseptic cleanliness in dealing with each confinement. Day after day, faith in The Gospel of Cleanliness was put to the test, until the days merged into years and the years succeeded each other but never once was it found to fail. The universal success in preventing child-bed fever, which resulted from the practice of using antiseptics in midwifery, should make the fact evident to any reasonable person that in the proper use of antiseptics is to be found the right and only safe method of conducting a confinement.

“To know what to do and then to do it, comprises,” says Sydenham, “the whole philosophy of practical life.”

RELATING TO THE ANNUAL LOSS OF LIFE FROM CHILD-BED FEVER.

We have just observed that of the thousands of women who were attended throughout the whole time of their confinements in a lying-in hospital during a period of sixteen years, not one died of child-bed fever. But if we examine the reports of the Registrar General for England and Wales, dealing with these sixteen years, we

shall find that about thirty-two thousand women are recorded as having died of this disease in those two divisions of the kingdom, an average of two thousand a year.

It is only by appealing to sentiment that the true meaning of an annual loss of so many women's lives can be fully appreciated. Take England and Wales. Let any mother consider, that by the time her child has grown to be ten years of age, twenty thousand of her fellow women will have died of this disease, twenty thousand mothers losing their lives in carrying out a trust and duty deputed to them by Nature. Of these fifteen thousand, for that is the proportion, will have been young women in all the hope of their first motherhood gaining only a gleam of sunshine that "promised them a morn which never turned to day;" twenty thousand husbands rendered disconsolate, mourning in as many homes the loss of all that made home dear to them, homes that might have been brightened by the light and laughter of children, light and life that can now never emerge from the darkness of that shadow which death has thrown around.

It was hoped that the Midwives' Act would prevent this loss of life, but this hope has only been partially realised, for more than ten

thousand women in England and Wales have died of child-bed fever since that Act was introduced in 1902. (Fourteen hundred and twenty nine died of it in 1909). If these women could have had the same protection at their confinements and the same advantages as those women who are delivered at lying-in institutions receive, their lives would in all probability have been saved. From the number of deaths which occur it is reasonable to assume that antiseptic precautions are not always used and that frequently when they are, their employment is so imperfect that the results are the same as if they had not been used.

"It is not the mere use of antiseptics," remarks Dr. Boxall, "but the method of using them and the faithful carrying out of details concerning their application, which calls forth their special value."

Then again the doctor or midwife attending a woman at her own home may be most careful not to omit any antiseptic precaution during the confinement, and before leaving, give clear and precise instructions as to what should be done and what should be avoided, but afterwards will be dependent on the intelligence and good-will of those left in charge whether these instructions are faithfully carried out.

The neighbour, or mother of the patient, acting as nurse, may be forgetful or, looking upon a method of managing a confinement and any proceedings connected with it that differs from what they have been accustomed to with suspicion, will offer a passive resistance and be careless about following out the directions that may have been given to them.

There is also that meddlesome busy-body, so frequently met with at poor people's confinements, to contend against, through kindness of heart, curiosity, or being a purveyor of gossip, a confinement is not an occasion for her to miss. Knowing little if anything about antiseptic precautions she may come direct from a woman with a red swollen face, or from one whose "bad legs" she has helped to dress, into the lying-in chamber. Her very presence there is a source of danger, and her curiosity to know how the labour is progressing or whether it has commenced may so overcome what little prudence she possesses as to cause her to introduce her finger into the patient's birth passage before the doctor or midwife arrives. By that single act this meddlesome busy-body may have done sufficient mischief as to cause the woman's death, the doctor or midwife being afterwards much puzzled to know how it was that with all

their care, she contracted child-bed fever. Even in the homes of well-to-do people an unsuspected danger may gain an entrance, and an incident that occurred a short time ago well illustrates this. Soon after the confinement, the nurse in attendance required some clean towels and rang the bell for the housemaid to bring them to her. Unfortunately for all concerned, this housemaid had been conversing with her sweetheart who was sufficiently recovered from Erysipelas of the face and neck as to be able to meet her at the garden gate. Hearing the bell ring she returned to the house and, without washing her hands, took the towels up to the nurse. How the germs of Erysipelas got on to the girl's hands may be left to the imagination, but they evidently did, and from them were transferred to the towels and so brought into the lying-in chamber of the recently confined woman. From what has been written about germs further on it will be easy to understand that, in using the towels, some of these germs would cling to the nurse's fingers, and how being eventually brought into contact with the wounded structures of her patient, they would gain access to this woman's system and cause the blood poisoning from which she died in a few days.

These incidents are sufficient to show that it

is the want of control over the circumstances which influence the result of a confinement, that marks the great difference between a delivery taking place at a lying-in institution and one taking place at a patient's house. A girl, when a child, is given a free education, but when she grows up to womanhood and marries, has to gain information regarding the management of the health in pregnancy and the proper precautions to be taken at childbirth in a haphazard manner. So long as women are left in ignorance of these matters and how child-bed fever can be prevented, so long will this disease continue to claim its yearly toll of victims.

DUST AND GERMS.

If you wish to defeat your enemy and prevent him from injuring you, it becomes necessary to learn something about him, his habits and way of living, and his methods of attack. So, in the same way, when we find that there are certain minute little bodies known as microbes or germs capable of injuring us, such as the putrefactive germ that Louis Pasteur discovered was the cause of blood poisoning and child-bed fever, we shall be in a much better position to protect

ourselves against them and resist their attacks, when we know their habits, the conditions favourable to their life and growth, and the circumstances that cause them to become dangerous to us. Though invisible to the eye their presence had long ago been suspected, but when more powerful microscopes were made that enabled them to be seen and studied, it was as if a new world of wonder had been revealed. Their place in nature is so extraordinary that in reading an account of what they accomplish, one is apt to overlook the fact that this account is something more than a marvellous story, that these germs or microbes are common realities affecting our daily life.

Probably by a few observations upon another common reality of daily life, namely, the dust of the dwelling-house, a better idea may be formed concerning these microbes than would be the case if there were nothing to compare them with, and sufficient knowledge gained about them in their connection with midwifery that is of any importance to possess. Germs, however, have little in common with the particles of this dust beyond being constantly associated with them, very numerous and very minute.

DUST OF THE DWELLING.

Most of us must have felt some surprise on looking for the first time at the sunbeams glinting through the cracks or crevices in the shutters of an empty room to find that the air was full of moving particles of fine dust. Probably this surprise was increased when we realised more fully that the air of every room of the house must be in the same condition, and had been so during all the time we had been occupying it. Collecting some of this fine dust, that from the top of a picture frame will do very well for our purpose, and examining it under a microscope we find it consists of particles of various substances, such as minute portions of dead skin, (rubbing the hands together vigorously or brushing the hair will cause a quantity of these bits of dead skin to be shed) bits of hair, particles of wool and of cotton; in fact minute fragments of every thing in the house that wears away by use, so that whenever the carpet is walked upon, or the coat brushed, or the bed made, or the table-cloth shaken, small portions of their material are removed and thrown off and mix with this almost invisible dust that is in the room. Even when the dog is patted or the cat stroked, further minute

particles are added to the surrounding air. Considering the composition of this dust, it is not very pleasant to know that all the time we are in the house we must necessarily be inhaling some of it, but fortunately there is in the nose an arrangement of folds and curves presenting a large moist surface, which surface not only collects any dust contained in the air passing over it in breathing, but also warms this air before it gains an entry into the lungs. This well illustrates the advantage of always breathing through the nose, while the fact that every room is full of this dust shows how desirable it is that the house should be properly ventilated. Even if the house is in the midst of a large town, the outside air will be cleaner and purer than that inside. Of course the smaller the town the better will be this outside air, and the best of all will be that of the country hill side. The out of doors or open air treatment of consumption, which has proved to be so successful, is based upon giving the patients, night and day, an atmosphere that is pure and free from the disagreeable dust a dwelling house constantly contains, while this method of treatment has the further advantage that there is less likelihood of the germ of this disease being conveyed to others. The old

notion that night air, as it is termed, is injurious has long ago been disproved. If vessels containing food, such as milk, are left uncovered in a room for some time, they will naturally collect a quantity of this dust and the microbes with it, which will afterwards very probably be taken with the food. Possibly Numbers xix. 14, 15, "and every open vessel which has no covering upon it shall be unclean," referred to this. Though more might be said about this particular dust, what has been written will show that in our living rooms we may be constantly surrounded by minute particles of matter without their presence being obvious to us. Few would be content to drink or even wash in dirty water, yet how many remain satisfied to keep their doors and windows closed and constantly breath an atmosphere which contains the impurities just described simply because these impurities are not visible.

GERMS OR MICROBES.

The word germ is familiar, but as a name for microbes is somewhat misleading and conveys a very feeble idea of the characteristics and remarkable properties possessed by these

wonderful little bodies, though our knowledge of microbes has been very much extended of late years, many people look upon them as of little personal concern, and consider that they are only connected with disease and the cause of infectious maladies. They do not realise that these minute forms of life are constantly with us, and the result of the work of the greater number of them is necessary for our welfare. Very numerous and so minute as to be invisible except by the aid of a powerful microscope, microbes are not particles of inert dead matter like those of the dust but, belonging to the vegetable kingdom, possess life. They are the smallest forms of living matter known to science, and thousands would find sufficient elbow room upon a pin's head while numbers could collect on a particle of dust. This they do, and so the more dust there is in a room the more microbes will it contain ; another reason why a room, and especially a lying-in room, should be kept as free from dust as possible.

Though of vegetable (cell-like) structure they are not seeds yet, with them possess the property of remaining passive or unchanged for months or even years until they meet with circumstances that call them into activity and are favourable for their increase in numbers—

these are generally those of suitable food together with warmth and moisture—then they will multiply so rapidly, that in twenty-four hours, one microbe may have multiplied into many millions of active germs of the same kind as the original. Some give off little spores that, in comparing them with plants, may be looked upon as the seed of the microbe, but the usual mode of multiplying is for a germ to increase slightly in size and then divide into two. This doubling process is repeated and repeated until all the food is exhausted or the other necessary conditions of warmth and moisture are no longer present. A microbe can divide into two and so double itself when it is only twenty minutes old. The little beads of the germ of putrefaction divide and multiply themselves in this manner. Microbes are to met with everywhere; in the air, water, and the soil or earth as far down as three or four feet. They are found to be more plentiful in low lying districts and also in crowded towns where there is plenty of dust than on lofty mountains or the middle of a desert, but there does not seem to be any place that is absolutely free from them. If some milk is left exposed, the little rod-like germs that Pasteur discovered as the cause of the souring of milk, will soon find it out, and meeting

with the conditions favourable for their increase in numbers, will rapidly multiply and cause the milk to become sour. Milk exposed at the other side of the world, in New Zealand for instance, would be attacked by the same kind of microbes and a similar result happen. This illustrates how very universal these wonderful little bodies are. When their food supply is stopped, vast numbers of them die, but not all, and some will remain and ready, though only passively alive, to repeat their role, even if some time intervenes before they meet with a favourable opportunity. While many kinds, in fact most are easily killed by sunlight and want of moisture, others are not so readily destroyed, except by boiling water and the action of certain chemicals, such as chloride of lime and other antiseptics. One important point to bear in mind in regard to the multitudes of these microbes is, that by far the greater number of them, in Nature's wonderful way of working, are our benefactors, and that only a comparatively few are injurious to us. In their rapid increase, when they meet with suitable food, they produce certain changes in the substance they are feasting upon, and if this is dead animal or dead vegetable matter, these changes bring it into a condition that plants can

take it up as food for their growth and sustenance. Other germs also, as if they were little chemists, have an influence upon the soil, effecting changes in it which are of still further benefit for the growth of plants. It is not too much to say that if it were not for the beneficial workings of these wonderful little germs, all life, certainly all useful life, would cease on the face of the earth, for having no food the plants would perish, and without plants to eat animals could no longer live and there would be nothing left for the support of man. Their bodies would not decompose in the ordinary way, for there would be no germs to effect this change, but probably they would shrivel and when perfectly dry, fall into dust, and the earth become barren, like a vast desert. Besides improving the farmers' crops, and providing us with the necessities of life, they even add to our enjoyment of it for they give flavour to food, such as cheese and butter. It is difficult to determine the exact role in Nature which the germs that produce infectious diseases, such as Diptheria or Typhoid fever, play. The germ of putrefaction, when it attacks us, would seem to be working out of its proper sphere, but it is only following its natural habit when it meets with a wound that offers it food, warmth and moisture, of

promptly taking advantage of the opportunity to increase and multiply. Germs have as first cousins the curious but familiar plant structures (generally without colouring matter) known as yeasts and moulds. Yeasts, by producing fermentation, change certain sweet liquors into wine or beer, while moulds will find suitable material for their growth in bread, badly preserved fruit, and other well known articles. The white patches, sometimes found on the tip of the tongue and on the lining membrane of the mouths of delicate little children, and known as "The Thrush," consist of a kind of mould ; another kind is the cause of ringworm of the scalp and face. From the foregoing, some idea may be gained of the general character and nature of those minute bodies, and we will now consider more closely some of the microbes that do not seem to have friendly intentions towards us.

Examining them under a powerful microscope they are seen to differ both in shape and size, and so characteristic in form are many of them that a medical man can generally determine the disease a germ under observation would give rise to. The germs that cause consumption are of the form of slightly bent little rods, those of lock-jaw are little rod-like bodies clubbed at

one end. These are found in the earth, and frequently in stables from the earth brought in there by the horses' feet. A stable man cut his finger and to stop the bleeding applied some cobwebs to the wound (an old but very dirty remedy). Some of the dust of the stable containing these germs had settled upon the cobwebs, and gaining through the wound access to the man's system, set up the disease of lock-jaw from which he died. "Fuller's Earth" sometimes contains this germ, and infants whose recently cut navel string has been dusted over with it, have been known to die from the disease this germ produces. The germs of Erysipelas and those of putrefaction are very much alike, the only apparent difference is in the former being a little larger than that of putrefaction. The germ of putrefaction is the chief cause of blood poisoning and looks like a chain of little beads (six or more) strung together. While some germs are common and to be met with nearly everywhere, such as those that produce putrefaction and the souring of milk, others are only found at certain times and in different places, and are generally those causing infectious diseases such as Cholera and "The Plague." Allusion has been made to the property that germs possess of falling upon an article and

afterwards clinging to it in a loose kind of way. By our hands coming into contact with these articles, many germs get on to our fingers, and numbers of them collect under the finger nails and in the grooves around the nails. If a splinter is run under the finger nail, it will probably convey into the wound some of the germs that were there ; and should any of these be putrefactive germs, the wound may begin to "fester," as it is termed, producing the well known whitlow of the finger. The favourable circumstances, frequently alluded to, in which germs become markedly active and rapidly increase in numbers, are usually those of suitable food, warmth and moisture. The germ of putrefaction, the germ that produces blood poisoning, is a good example of one that seems to revel in these conditions of suitable food, warmth and moisture, and, as it is the germ we are most interested in, it deserves to be considered more fully than the others. If meat is left exposed to a moist atmosphere in a warm place, it will soon become putrid. The germs that cause meat or dead bodies to decompose, the putrefactive germs, will come in contact with it, and finding there the conditions favourable for their increase, become active. Rapidly multiplying they will soon produce the well

known changes of putridity. If a piece of fresh meat is placed within a few feet of the putrid meat, it will be affected and change much more quickly than it would were there no bad meat near. Nothing can be seen to have passed between the two pieces of meat, but yet millions of germs must have gone from the putrid to the fresh meat infecting it to its destruction.

This germ of putrefaction, then, can be met with wherever meat will putrify, and very useful germs they are ; but they can also become very dangerous, causing serious injury and loss of life. In making a post-mortem examination, doctors sometimes prick their fingers or they may have a small wound or scratch on their hand ; if any putrefying matter from the dead body gets into these wounds, it is liable to set up blood poisoning, particularly if the body under examination was that of a person who had died of this disease, for germs, under the circumstances of multiplying rapidly, are specially active and virulent, and many a medical man has lost his life in that way, not simply on account of the matter which got into his wounds, but that it contained these putrefactive germs. Active as these little enemies are we know now that they can be destroyed by boiling water,

so that a piece of linen contaminated by them may be purified by boiling. Meat may be protected against their activities by salting, as in the case of bacon. There are other chemicals much more convenient for use on our bodies than salt, and these, from possessing the property of destroying putrefactive germs, are called antiseptics.

The chloride of lime and water that Semmelweiss used was an antiseptic. Semmelweiss employed it on account of its well known property of removing the taint of putrefying matter, which matter, as already mentioned, he assumed was on the hands of those who examined his patients. The effect though of this chloride of lime was to destroy the germs upon the presence of which that taint depended, the germs of putrefaction. Although we cannot see these various germs, the souring of the milk and the putrefying of the meat show that they are never far away, so we have to act as if they were always present and be on our guard against them. Nature does not leave man a helpless victim to any wandering germ, for if he is strong and in good health, he may resist their attacks provided the attacking germs are neither too virulent nor too numerous; but if he gets exhausted from any cause, such as pro-

longed exertion or loss of blood, or is depressed from exposure to cold and wet and as a consequence his resisting powers become diminished, then the attacking germs may succeed in causing him some disease. It is the same with animals. Anthrax, a disease that often kills sheep and cattle and sometimes attacks men, seldom destroys rats because they can resist the onset of its germs, but if the rats become exhausted from any cause they readily fall victims to the disease. It is important to remember that the natural resisting power against the attacks of injurious germs is diminished by loss of blood, prolonged exertion, or anything that causes exhaustion. A man in an ordinary state of health does not readily contract pneumonia, but if he is out of doors all the day, exposed to the wet and cold, and in the evening has to remain in his wet clothes for some time, perhaps without having had food, his powers of resistance against the germ that causes pneumonia, or inflammation of the lungs, are much diminished, and he is then liable to contract that disease. A man, gross, unnaturally stout and of intemperate habits, is not a man in good health, and if he wounds himself is very liable to be attacked by the germs that produce Erysipelas or by those that produce

blood poisoning. Another man may have been working hard all day at a kind of labour to which he was unaccustomed, and become exhausted ; if a cask or heavy piece of wood fell upon his leg producing a bruised or lacerated wound, such a wound is apt to do badly, as *bruised* and *torn* tissues, compared with a tissue that has received a clean cut with a sharp instrument, have their vitality or germ resisting power much lessened, while at the *same time* the man's *general* resisting power has been diminished by the exhausting effect of the day's work. If the opportunity is afforded them, by dirty clothes or an *unclean hand* coming into contact with the wound, the germs of putrefaction will *now* meet with little opposition, and, gaining admission to the system may set up blood poisoning. The state of a woman who has just been confined is similar to that of this man. She may come to this ordeal of unusual exertion with an enfeebled body through neglect of her health during pregnancy, at the end of labour, especially if it has been a lingering one, she will be in an exhausted condition, and if it has been a first confinement, there will be a bruising of the parts which will, in all likelihood, be more or less torn or wounded. We have just noted that a wound in bruised

parts is very liable to infection because the vitality or power of resistance of the structures so injured has been diminished, and if together with this the general power of resistance of the whole body is lessened by exhaustion from prolonged exertion, the wound will not be able to resist the attacks of any putrefactive germs that may gain access to it. In this instance, the wounded bruised parts will be both warm and moist, and the wounds and blood will provide suitable food ; these conditions being those which are favourable for the dangerous activity of the germs of blood poisoning. In this combination of circumstances, a combination which nearly always exists when a woman is confined for the first time, it can be easily understood what great care should be taken to prevent any of these dangerous germs gaining access to the wounded parts. If at any time during her confinement she has been examined with a finger that is not antiseptically clean, (any finger that is not properly cleaned may have under the finger nail and in the groove around it, quite a number of the germs that produce blood poisoning) she will run a very great risk of getting child-bed fever. It was true in Semmelweiss's time—and it is true now—that the examining finger, if not properly cleaned, is the common

cause of the dangerous germs that produce child-bed fever being brought to the woman in labour.

To show how this examining finger and the hands should be cleaned, and what great care operating surgeons take to protect their patients from the chance of any of these dangerous germs being conveyed to them, either by the surgeon's hands or the various articles he may require to use in connection with the operation, a description is given of the method usually adopted by them to attain what is known as Surgical Cleanliness.

SURGICAL CLEANLINESS.

The principles of this form of cleanliness are practiced with the object of preventing dangerous germs, such as those of Erysipelas and blood poisoning from entering the body or system of a person wounded through an operation, and experience has shown that they attain that end. A surgeon about to perform an operation will not leave anything to chance. He does not know that dangerous germs will necessarily get into the wounds he makes, but he knows that they may be ready to take advantage of the

opportunity when least expected. His knowledge that they have a habit of clinging to materials and collecting on the hands and fingers causes him to take every precaution to protect his patient from any possible source of danger. All the instruments that he may use, such as knives, scissors, needles, etc., are first boiled for half an hour in water to which a little common washing soda has been added, or they are soaked for some time in a suitable antiseptic solution ; in either case, shortly before an operation, they are generally placed in an antiseptic solution in which they are kept until the moment they are required, so that no germs can collect upon them in the interval.

All the materials that may afterwards be required to cover and protect the wounds, are placed in flannel bags and the bags securely tied. These bags and their contents are then steamed for a time (half an hour or more) in a closed chamber made for the purpose, or materials may be used which have been charged with some antiseptic, so that when moistened with an antiseptic solution the germs, if any, upon them will be destroyed. The exposing of instruments and materials to heat, whereby any germs they might contain are destroyed, is called sterilising, and any articles so treated are said to be

sterilised. The sterilised materials or dressings are not removed from the flannel bags until just prior to their use. The region of the patient's skin where the wound will be made has, as much as possible, to be freed from germs. It is first well washed with soap and warm water, good household soap answers the purpose very well, and scrubbed with a previously boiled (to free the brush from germs) but not too hard brush for some minutes. This soap is then washed off with warm water that has been boiled, the skin is carefully shaved and all the fine downy hairs upon it removed. It is again washed, this time with soap and water and turpentine or, better, spirits of wine to ensure the removal of any grease natural to the skin. This again is rinsed off with some sterilised water, and then some sterilised lint or gauze moistened with an antiseptic solution is applied over the cleaned portion of skin. Some surgeons at this stage omit the antiseptic solution and apply the sterilized gauze or lint unmoistened but dry; this covering is kept in its place and not removed until the time of operation. Now the hands of the operator and of those who assist him have to be freed from any germs. This is done just prior to the commencement of the operation and is methodically

carried out. The surgeon sees that his finger nails are quite short and freed from any dirt that may have collected underneath them. He then takes a moderately hard nail brush that has been previously boiled or soaked in some antiseptic solution, and with soap and hot water thoroughly scrubs his hands and forearms for *five* or *ten* minutes. He is very careful to clean all out from under his finger nails and in the grooves around them. Having done this he rinses the soap off with clean warm water, and then soaks or rather works his hands about in a mixture of three parts spirits of wine and one part water, containing a suitable antiseptic, for another five or ten minutes.

Everything requisite has been placed near him and in the clean state that has been mentioned. The patient being ready, the surgeon takes his hands out of the antiseptic solution, picks up a knife out of another solution, and then makes the necessary incision through the surgically clean skin of his patient. Some surgeons, lest the knife in dividing the skin should by any possibility convey a skin germ to the deeper parts of the wound, use a second knife to complete the operation. A bowl of antiseptic solution is usually placed near to him into which he may from time to time dip his

hands. All who have assisted at the operation have cleaned their hands in a similar manner and kept them clean in the same way. Sometimes india-rubber gloves sterilised by boiling are used to cover the hands. After the operation is over, the germ free dressings are applied and the patient removed to bed. The surgeon, having confidence in the measures he has taken, knows that there will be no wound fever, that the wound he made will heal in a simple and natural manner. The dressings applied will not require to be changed, and when they are removed at the end of a week or ten days, the edges of the wound will be found to have perfectly united. Instead of months for recovery, with risks of blood poisoning and continued anxiety, the matter is over in a few weeks. All this extreme care is not that of extra precaution taken by a few surgeons, it is an ordinary routine method that is carried out hundreds of times every day and nearly all over the world.

Surgeons and hospital trained nurses who have frequently to deal with wounded people, naturally and without thinking, when occasion requires, adopt those measures of cleanliness just described, or others similar in principle which have become a sort of Gospel to them in

such matters. A good illustration of an interpretation of this Gospel of Cleanliness comes to us from the far East, in the great care the Japanese government took of its soldiers and sailors during the late Russo-Japanese war. Baron Tokaki, in speaking of the health of the Japanese army and navy, said, "The Japanese soldier and sailor went into action when possible, wearing new clothes over a thoroughly cleansed body. This was done as a matter of self-respect, and was also useful as a preventative against the introduction of poison when a man was wounded." ("Poison" evidently meant dirt containing dangerous germs.)

ENGAGING THE DOCTOR.

It is not at all unusual for a woman in the last few weeks of pregnancy to call, in quite a casual way, upon a doctor, and, after mentioning that she expects to be confined during a certain week of such a month, ask if he will attend her, and, after the doctor has merely made a note of the probable date opposite to one of her name, for them both to feel satisfied that they have done all that was necessary to effect the

poses. That having been settled the doctor may ask for some of the urine to be sent to him in a clean bottle, for the purpose of ascertaining if the kidneys are acting properly. It is during the later months of pregnancy and when the increasing size of the child causes a crowding of the body, that these organs are apt to be impeded in their work. This overcrowding is more likely to occur in first pregnancies, for in these the body of the mother yields less readily to the pressure of the growing child than in subsequent ones. If at any time there is a diminution in the amount of urine usually passed during the day, let your doctor know at once. See "The Disorders of Pregnancy." The next enquiry will probably be about the nursing arrangements and the answer to this will depend of course upon what have been made or are intended to be made.

ENGAGING THE NURSE.

A well-trained monthly nurse will be sober and trustworthy, clean in her habits and person, and will faithfully carry out all the doctor's instructions. She will wear a clean washable dress with sleeves that can be easily rolled up

above the elbow, also a clean removable protective white apron and bib, will be careful to keep her finger nails short, and know the proper use and action of antiseptics and how to clean her hands effectively, how to arrange the bed and how to wash her patient properly and prepare her for the confinement. Will be able to judge how the labour is progressing and when the attendance of the doctor is desirable, and have everything in readiness for him by the time he arrives ; also, if necessary, give an enema, that is wash out the bowel. On no account nor at any time will she make an internal examination. After the confinement, she will not change the diapers nor attend to the patient without having previously washed her own hands. Will be able to take a temperature and make a note if there is any increase of it ; will observe if there is any change in the character of the discharges, and, if they have an unpleasant odour, report the fact to the doctor. Will know how to wash and attend to the baby, and the proper care of the mother's breasts, and will not admit visitors to the patient's room until the doctor says that they may be received, and then not visitors from a house where there is or has been any infectious disease. From this brief account of what a

trained nurse is generally capable of, and from what may be gathered in reading the rules that midwives have to observe, given a few pages further on, a fairly good idea may be formed of the many advantages there are to be reaped from the services of such a nurse at a time like that of a confinement. Unfortunately, however much they may desire to the contrary, many women find, either on account of the expense or some other sufficient reason, that they will have to engage the services of a nurse without any definite training and consequently without the evidence it usually affords of her capability. As the selection of a suitable nurse under these circumstances will generally be found one of no small difficulty, it should therefore be undertaken at an early date so as to allow of ample time for full enquiries being made. Though gradually diminishing in numbers, there are many so-called monthly nurses who ought never to be allowed to enter the lying-in room, relying, as they often do, upon a domineering manner to cloak their ignorance. They become assertive and frequently, with the idea that it adds to their importance or saves them a little extra trouble, will disregard the doctor's directions. The consequences of this neglect, however, will, without any doubt, fall only upon the mother

and her new born babe, and perhaps be sufficient to cause either of them a serious illness or even their death. The following comments on this subject by some eminent doctors are instructive and may be of some assistance in indicating the class of nurse to avoid in making a selection. Dr. Galabin remarks : " In practice among the poor, probably the greatest difficulty is to secure that the nurse uses the same precautions as the doctor." Dr. Jardine says : " A well-trained conscientious nurse is a treasure, a badly trained presumptuous woman who does things on her own responsibility is a terror." Dr. Hayden Browne writes : " The best nurse is the quietest nurse ; depend upon it, if she begins to gabble the moment the doctor enters the house, she is not good for much." Not only do they wish to impress the doctor, but they try to kill two birds with one stone and endeavour to arouse the admiration and estimation of the patient as well. " I think that she is making good progress, sir." " Oh ! is she ? " " Yes, sir, I have tried the pains twice." " Will you go down and ask for a teaspoon," was the request made to her, and when she had gone, the patient was asked if she had passed her finger inside, and the reply was that she had. The nurse was sent off there and then, for it was

considered that no nurse at all was safer than one who was so mischievous as this." Dr. Fairbairn comments, "If the patient is left to herself in this matter she will choose some worthy creature who is sympathetic and no bother in the house, probably because she does not make trouble for the servants by asking for cans of water and adding to the household washing. In private practice we sometimes have to deal with so called nurses who seem to be old family relics handed down." There are also many trustworthy women acting in the capacity of monthly nurses who, though they may not have been specially trained, possess both that intelligence and power of observation which enabled them to profit by experience, and these women, when they are willing to cheerfully carry out the instructions of the doctor without concealing anything from him, and refrain from unnecessary interference, are often a great comfort and frequently found to be very good nurses.

The difficulty will be to distinguish between those who are good nurses and those who claim that title without any right to it; so the enquiries will take the direction of finding out which are which, before making the selection. The qualities that are essential in a woman who, with-

out any training, takes the place of a nurse, are possessed by many women, and it may be the case that an active, cheerful friend or relative, with the interest of her charge at heart, and without pretending to a knowledge that she does not possess but willing to faithfully carry out any instructions given to her, and who will be calm and collected and retain her presence of mind in an emergency, can fairly well undertake the service. Probably the easiest solution of the difficulty will be found in enquiring of the doctor if he can give the addresses of any monthly nurses in whom he has confidence, and his recommendation should in that case be followed, for being aware of their faults and knowing their good qualities he can be prepared against the former and take full advantage of the latter.

RULES FRAMED BY THE CENTRAL MIDWIVES' BOARD UNDER SECTION 3. I. OF THE MIDWIVES' ACT 1902. SECTION E.

1. The midwife must be scrupulously clean in every way, because the smallest particle of decomposing matter may set up puerperal fever. She must wear a dress of washable material, and over it a clean washable apron.

2. When called to a confinement, a midwife must take with her in a bag or basket furnished with a washable lining, an appliance for giving vaginal injections.
 A different appliance for giving enemata.
 A catheter.
 A pair of scissors.
 A clinical thermometer and a nail brush.
 An efficient antiseptic for disinfecting the hands.
 An antiseptic for douching in special cases.
3. Before touching the genital organs or their neighbourhood, the midwife must on each occasion disinfect her hands and forearms.
7. The midwife must wash the patient's external parts with soap and water and then swab them with an antiseptic solution on the following occasions :
 - a.* Before making the first internal examination.
 - b.* After the termination of labour.
 - c.* During the lying-in period when washing is required.
 - d.* Before passing a catheter.

For this purpose the midwife must on no account use ordinary sponges or flannels, but materials which can be boiled before use, such as linen, or burnt afterwards, such as cotton wool.

8. No more internal examinations should be made than are absolutely necessary.
10. She must remove soiled linen, blood, fæces, urine, and the placenta from the neighbourhood of the patient and from the lying-in room as soon as possible after the labour, and in every case before she leaves the patient's house.

THE DISORDERS OF PREGNANCY.

Only a few of these may be experienced, but not many women escape them altogether. Taking those of less importance, first we find that they are chiefly disturbances of the digestive system, and indicate that the excretory organs have not yet adapted themselves to the changed condition of the body.

VOMITING or morning sickness, has already been alluded to. If it begins late in pregnancy, takes place in the middle of the day, and is persistent, a doctor should be consulted.

TOOTHACHE.—Decay of the teeth proceeds so rapidly and is so common a trouble in pregnancy, that a woman expecting to be in that condition should let a dentist examine her teeth for any signs of decay and avoid being one of those who

lose "a tooth for every child." Filling the hollow of the aching tooth with carbonate of soda will often relieve the pain, and a teaspoonful of the same dissolved in a pint of warm water may be used as a wash for the mouth. There is often associated with this decay of the teeth a form of acid dyspepsia, for which a little Gregory powder taken before meals for a few days may prove beneficial or it may be better to consult a doctor.

Get the toothache relieved for the pain is disturbing and often prevents needful sleep and ease.

Tender gums, another common trouble, may be relieved by using a mouth wash of Tincture of Myrrh and Borax in a little water.

NERVOUS DISTURBANCES.—Women of nervous temperaments often have various troubles, such as longings and cravings for different kinds of foods; sometimes they have an excessive flow of saliva which may amount to a constant dribble from the mouth, or suffer from a frequent hawking of tenacious mucus. These annoyances usually begin early in the pregnancy and continue for an uncertain period, but they generally subside after the fourth month. If they produce any weakness a doctor should be consulted. The nervous system in pregnancy

is one very readily affected, and a woman in this condition requires every consideration from her husband and friends. It would seem at times as if her character had entirely altered, and from being bright and cheerful she is apt to become morose, irritable and peevish, not brooking contradiction nor accepting any suggestion. All this requires to be dealt with very patiently by those about her. Miserable gossipers of unpleasant news must be kept away, and she should be cheered up and assured with every confidence that all will be well, as is generally the case. The husband, by patience and kindness in many little things, may do much to help her in bearing her burden, while the feeling given in this way that he has a sort of protecting care over her will be of great comfort to his wife. Any method of management contrary to this will only make her condition worse. Some women, on the other hand, change to quite happy beings, particularly where there has been a great wish for a child ; cheerful and bright, they joyfully look forward to the time of its arrival. Faintings and palpitation are also troubles at times in the nervous temperament.

HEARTBURN.—This usually arises from indigestion and want of attention to the bowels. A few drops (20 or 30) of spirits of sal-volatile,

or some carbonate of soda in peppermint water, may give relief for the time being; a little carbonate of magnesia is also another very useful remedy.

CONSTIPATION.—This is a common disorder of pregnancy, and women who had no trouble with their bowels before pregnancy are frequent sufferers when in that condition; while with others their constipation is rendered much worse. With proper care in the management of pregnancy (see diet in pregnancy) much of this trouble as well as many of the others mentioned, may be avoided; but if the bowels still remain stubborn it will be necessary to assist them in some way, for they form part of the excretory system of the body. Castor oil is not a suitable aperient as it purges too freely, and only a gentle but efficient daily action of the bowels is required. A teaspoonful of compound liquorice powder or the same quantity of the old-fashioned confection of senna taken for a few nights may answer the purpose. These remedies often have the disadvantage of requiring the dose to be increased, but with cascara sagrada, this is said not to be the case, and ten to thirty drops of the liquid extract or a two grain dose of the solid, may afford relief. Cascara is a well known laxative aperient and can easily be

obtained. A pill containing one grain of blue pill and four grains of compound rhubarb pill taken once a week throughout the pregnancy, will regulate the action of the bowels and promote that of the liver. If the bowels have not acted for two or three days it may become necessary to wash out the lower portion and remove the material collected there. This is best done by throwing up the back passage a pint or more of warm water and soap (soap suds). For this purpose an india-rubber enema syringe (costing about two shillings) is required, and doubtless any nurse would explain its management. This syringe must not be used for any other purpose than washing out the bowel, and for this it may be needed several times, especially towards the end of pregnancy when constipation is apt to become more troublesome. Where aperients have been taken at night, some citrate of magnesia in a glass of cold water, taken while in a state of effervescence the first thing on the following morning, will improve their action.

PILES.—These often appear towards the end of pregnancy and are frequently the result of constipation. Probably relief may be obtained by resting on the side with the hips well raised, or by kneeling for a short time while the head and chest are kept low down on a pillow. This

position seems to empty the pile, and then the resting position on the side can be taken afterwards. If the piles become tender and inflamed some medical advice will be required.

VARICOSE VEINS.—These sometimes appear during the later months also, and generally in women who have had several children. They should be supported by a bandage, and it will be well to avoid standing about too much. Severe bleeding may follow any injury to them.

SKIN AFFECTIONS.—In brunettes and women of dark complexions, patches of brown discoloration often appear on the forehead, face, body, and around the nipple of the breast. They remain throughout pregnancy, but generally disappear after confinement. Various rashes and eruptions occasionally appear and may be very irritating, though as a rule they are quite harmless; but in some instances they may indicate the presence of some infectious disease or interfere with sleep, when of course a doctor must be consulted.

THE MORE SERIOUS DISORDERS OF PREGNANCY.

ABORTION.—This is the most common of the serious disturbances of pregnancy, and one out

of every five pregnancies is said to be abruptly terminated by it. It is often spoken of as a "mishap," but when occurring in the later months of pregnancy, is then more generally termed a miscarriage. An abortion can happen at any time, but the third month of pregnancy is that in which twenty-five out of a hundred take place and these occur probably on a day corresponding to that of a poorly time. No advantage will be gained by describing the causes of this disturbance beyond mentioning that it may be due to some defect in the health of the husband or wife, or both, the proper treatment of which, by a doctor, may often enable the mother to go to full time and give birth to a living child. To recognise when it threatens and what should be done to meet the difficulty, see Pregnancy, under the heading Third Month. Women are much too apt to consider abortions of little consequence and to treat them accordingly. Although in a way it is a small matter of a confinement and rarely results in death, it requires almost as much attention, both at the time and afterwards, as that of the birth of a child at full term. Unless an abortion is treated with about the same consideration as an ordinary confinement, the womb may not return to its natural size, but remain large and heavy

with a tendency to fall away from its proper position in the body. At the subsequent poorly times, more blood than usual may be lost, pain and discomfort arise, the habit of aborting may be established and barrenness be the result. Therefore let no heed be paid to the friend or neighbour who says that it is nothing and will be over in a day or two; an abortion can only be properly treated by a skilled medical man, while neglect frequently causes a life-long illness.

MISPLACED AFTERBIRTH.

This serious trouble does not, fortunately, often occur. It is a condition rather than a disorder, and is due to the afterbirth being in the first instance placed too low down in the womb and too near the mouth of it, so that when it enlarges as pregnancy advances, the afterbirth encroaches upon and sometimes grows quite over the mouth of the womb. Its presence in that position causes that part of the womb to become thicker, softer, and more full of blood. This position of the afterbirth or placenta, is spoken of by medical men as "*Placenta prævia*" or "*Partial placenta prævia*," as the case may be. It is a condition full of

danger, both to the mother and the child. The pregnancy has often to be terminated on account of the great risk to the mother while it continues from a sudden loss of a large quantity of blood. There is also under these circumstances a more than usual danger at confinement of child-bed fever being contracted. It is seldom that anything occurs before the sixth month to show the afterbirth is misplaced, more often later and frequently not until labour has commenced. Sometimes a month or two before the confinement is expected, a little blood may be noticed coming from the front passage. There is no pain felt as in threatened abortion, but day by day the bleeding continues, though possibly not more than a teaspoonful in the twenty-four hours. The bleeding may arise from a slight opening of the mouth of the womb but it may come on without any apparent cause. No time should be lost in sending for a doctor, for as previously stated, sudden and serious bleeding may come on at any moment. Until his arrival, adopt the same measures as were advised in threatened abortion. See The Third Month.

THE CONVULSIVE FITS OF PREGNANCY.
(PUERPERAL CONVULSIONS).

This, the most dangerous disorder of pregnancy, is fortunately not common. A young woman advanced in pregnancy and apparently in good health, went to a thanksgiving supper, and whether she partook too freely of the good cheer provided I cannot say, but after her return she was seized with convulsive fits following each other in such rapid succession that it was with great difficulty her life was saved though that of her child's was lost. Had this woman been taught the proper management of her health she would, although looking and probably feeling fairly well, have known the risk that, in her pregnant condition, she was courting, of overtaxing her excretory organs, and so have avoided the calamity which befell her and her babe. Puerperal convulsions seldom arise before the sixth month of pregnancy, and while the liability to be attacked by them increases as pregnancy advances, it is greatest at the confinement itself. The disease results apparently from the accumulation in the system of certain waste products to which the condition of pregnancy appears to add a peculiarly injurious property, so that if the excretory organs fail to remove

these products, the patient is rapidly affected, the woman is seized, as it were, with convulsions.

Towards the end of pregnancy the child within the womb grows rapidly, and the extra duty of purifying its blood that the mother's liver has to bear, and her kidneys that of removing its waste products, is correspondingly increased, while at the same time their action is further impeded by the crowded condition of her body resulting from the greater space the child occupies. Under those circumstances it seems easy to understand how readily these organs can be overtaxed and caused to fail in their work, and how an indiscretion in diet, such as related, by throwing suddenly too great a strain upon them, may produce a condition in which puerperal convulsions are apt to arise. It has already been mentioned that overcrowding of the body is more likely to occur in first pregnancies, and this fact may be an explanation of the reason why this disorder is more frequently met with in these than in subsequent ones. All this may not be very easy to comprehend, but what I wish to make quite clear is the importance of so managing the health in pregnancy that the excretory organs will be assisted in their extra work, not impeded, obstructed, not overtaxed by indiscretions.

Though this disease seems to come on suddenly and with little warning, there are often many danger signals to be observed. One (mentioned by Dr. Garrigues) is, that if the wedding ring which fitted loosely at first, comes to fit more tightly, it indicates a slight dropsical swelling of the finger suggestive of kidney failure. Often the front or back of the head aches, attended by a feeling of depression, dizziness, or sickness; sometimes there is vomiting; on attempting to thread a needle there is a difficulty in seeing the eye, and there may be a throbbing and ringing in the ears. With one or more of these disturbances it may be noticed that not nearly so much water has been passed lately; perhaps what is felt may be thought to be only a bilious attack or sick headache. The experiencing of any of these ailments during the latter months of pregnancy means that they are sufficiently serious to require medical attention. Do not delay sending for the doctor, thinking that the headache or sickness will soon pass, for the more quickly he sees the patient the better will be her chance of recovery. Send a note describing her condition and mentioning the month of pregnancy; send also some of her urine in a clean bottle for him to test if the

kidneys are at fault. If convulsions arise a piece of stick, or the handle of a fork or that of a long spoon with a cloth or towel wrapped around it, may be placed between the teeth to prevent the tongue being bitten, and as the patient will be unconscious she should be placed on her side so as to allow of the flow of saliva to run out of her mouth instead of into her lungs. If the bowels have not acted lately and there is an enema syringe in the house, the lower bowel may, with advantage, be washed out with one or two pints of warm soap suds. The patient may have any quantity of water to drink, but no food, not even milk should be given until the doctor arrives. In the meantime have plenty of hot water ready, for it may be necessary for the patient to have a hot bath or be wrapped up in hot wet blankets so as to induce free perspiration. As convulsive fits do not frequently attack pregnant women I may seem to have given this subject more attention than requisite, but as it is a dreadful malady, very dangerous to the mother and almost always fatal to the child, one that if the warnings of its approach are attended to may be much mitigated or avoided, and one also so illustrative of the advantages that follow a proper management of the health in pregnancy, I

felt justified in giving a somewhat lengthy description of it.

THE LYING-IN ROOM.

The character of this will naturally vary according to the position in life of the woman about to be confined. When there is any choice in the matter a well lighted (germs do not like light) room should be selected, and this will generally be one having a south-west aspect. If it is a first confinement there should be more rooms to select from, but with people of limited means, to whom the following suggestions are offered, the ordinary sleeping room is the one usually adopted. If this overlooks a backyard, it will be better to move to a room in front of the house where the windows can be opened without disagreeable odours coming into it. Possibly the front parlour, though less quiet, might be used for the purpose, and would have the advantage of not being far from the kitchen supply of hot water. There should be a fireplace; the door opening on to the stairs or landing should not be too near a water-closet or sink, nor too far away; water-closets and sinks should be examined and any defect

repaired at once. The preparation of the room should begin at least a week before the time of the expected confinement. Everything not requisite for the confinement and necessary service of the sleeping room should be removed for the time being. Rugs, carpets and heavy window curtains collect and harbour dust, and dust harbours germs, so they should be taken away together with any pictures there may be hanging on the walls. The room can then be thoroughly cleaned, having first lit the fire and opened the windows so that the dust raised by the cleaning may be carried away. Do not wash the floor, if of boards, but use tea leaves or sawdust damped with some antiseptic (*Sanitas* is useful for this purpose), and in dusting any article employ a cloth damped in the same way. A single bedstead will be found more convenient than a double one, and it should not be put away in a corner, but so placed in the room as to give plenty of space at the end and at each side, with the light from the window falling on the right side of it. If it has a wire mattress, some clean boarding should be obtained, so that when wanted they can be placed across the bedstead over the wire mattress and under the ordinary one. This will give a flatness and firmness to the bed and prevent that sagging

in the centre which allows fluids to collect there and form an annoying pool. There will be the usual washstand and dressing-table ; do not leave a lot of odds and ends on these but as few things as possible. See that the drawers are cleaned and contain only such things as may be required ; and remove all unnecessary bed hangings.

Some pieces of oilcloth on each side of the bedstead and before the washstands are better than carpets as they hold less dust and are more easily cleaned ; two small extra tables, common deal ones, provided they are clean, will be needed ; four wooden chairs but not with cane or stuffed seats. All these things can be washed with good household soap and hot water. There should be three wash hand basins (one for the afterbirth) and two or three small bowls or pie dishes, a slop pail with cover, a chamber with simple commode, three large jugs or pitchers, one for hot water, one for cold, and one for mixing antiseptic solutions in. All these can be washed in the same way with hot water and soap. Candles and candlesticks will also be required.

PREPARING FOR THE CONFINEMENT.

When Solon made laws for the Athenians he was asked if they were the best laws and replied, "No, but they are the best laws that they can keep." In suggesting measures for guidance this view has often to be borne in mind, not that they are the most effective measures, but the best that a woman under ordinary circumstances can carry out, and the most important of them not unreasonable for a woman of limited means to adopt. Perhaps in time to come, some arrangement, similar to what I have indicated under the heading of Introduction, may be established, and in that case much of any anxiety in regard to the outfit would be removed. For those who consider the occasion justifies the expense, a lying-in outfit sterilised and ready for use can be purchased from the dealers. In the majority of homes, however, most of what is needful for the outfit can be easily obtained. In the remarks upon germs I pointed out that boiling water would destroy them, at least all of the injurious ones, if they were subjected to it for fifteen or twenty minutes, so the boiling of clothes for that length of time will rid them of any disease producing germs. All that may

be required, such as towels, vulvar pads, etc., can be treated in this way, then wrapped up securely in a clean sheet that has also been boiled, and placed where they would be protected from dust, in a drawer for instance, until required.

THE DRESS IN WHICH TO BE CONFINED.

It was common at one time for women to be confined in their ordinary everyday attire, whether this was clean or soiled, but as it would be impossible to ensure cleanliness under such circumstances, the rule now is to discard them at once when the confinement commences, and wear a clean nightgown, clean flannel petticoat, long, warm, clean stockings, and some slippers, and over all a comfortable wrap or dressing-gown of some kind. A good plan is to cut the flannel petticoat right up to the waistband at the back, and to the same extent also in front; this allows of one half being easily thrown back out of the way when necessary. Until then the two halves may be kept in place by safety-pins, and afterwards they can easily be stitched together for the ordinary use of the garment.

OTHER REQUIREMENTS.

A sufficiency of clean towels, diapers or quarter towels, and three or four dozen pads (vulvar pads), for absorbing the after-labour discharges. These pads are small bags about eleven inches long and five inches wide, with tapes stitched to each end so that they can be tied or pinned to the binder. The best material to stuff them with is a kind of gauze or cheese cloth. The bags can be made of old linen, and torn old linen can be used to fill them, care being taken that it has been boiled and is quite clean. The bags should be thrown away after once using, so it will be an advantage to have a plentiful supply of them. Sanitary pads, containing an antiseptic which prevents them becoming offensive, can be purchased, and are very useful, but if used they should be changed quite as frequently as the ordinary pads. A nail brush will be required, a good fibre one that, unlike bristle, can be boiled, may be bought for a few pence, and last, but not least, some good household soap.

PREPARING THE BED.

The middle third of the bed will require protecting in some manner. Good mackintosh or india rubber sheeting form the best protective material, and the most expensive, but oilcloth may answer the purpose very well, provided it is sweet and clean. Several sheets of thick, new brown paper are sometimes used with the same object. Over the protective are placed a blanket or two, then a sheet, then a proper width of waterproofing, then over this another sheet arranged as a draw-sheet, that is, folded twice and laid across the bed under the buttocks, so that, as one part of it is soiled, it can be drawn away for a cleaner portion of the sheet to come under the patient. Over these the usual coverings of sheet, blankets and counterpane. Sometimes the rubber protective is placed over the draw-sheet, and over these another sheet is placed. After the confinement the protective and sheet are removed, and the draw-sheet left for further use.

THE CLEANING OF THE HANDS AND ANTI-SEPTICS.

“Let it be remembered,” says Dr. T. G. Stevens, “that whatever an individual opinion

may be, it is the opinion of masters of obstetrics (midwifery) throughout the world, that the hands are still the most dangerous sources of puerperal sepsis (child-bed fever)."

The nurse will clean her hands in a manner similar to that described under the heading of "Surgical Cleanliness," but, as a knowledge of the proper way of doing this is one of great practical importance in midwifery, a further simplified description of it may be of some advantage. The first requisites are a clean hand basin, a good supply of hot water, some good household soap, and a new, clean fibre nail brush (not the one in common use, that has been left wet and exposed to dust, and is usually far from being clean). A fibre one is cheap, and can be boiled to sterilise it, without softening it too much. The finger-nails are cut short, and any coarse dirt there may be underneath them removed. Then, with the sleeves turned up above the elbow, the hands and arms are well scrubbed with the soap and hot water, particular attention being paid, as already observed, to the finger-nails, the grooves about the nails, and the spaces between the fingers. This washing and scrubbing is the most important part of the process, and should occupy at least *five*

minutes, a mere "dip and a promise" is of no use for the purpose. After the soap has been rinsed off (soap hinders the action of many antiseptics), the hands are then soaked in some antiseptic solution for another *five minutes*, at the end of which time they will be clean, and ought to be free from injurious germs. To keep the hands from being contaminated again, the bowl containing the antiseptic solution should be placed conveniently near for dipping them into it from time to time, until the matter upon which they are engaged is finished.

Doctors, midwives, and nurses, generally use an antiseptic with which they are familiar, but those usually sold by the chemists, such as Lysol, Cyllin, Izal, and Lysoform are simple to manage, and one or two teaspoonfuls of any of these added to a pint of warm water, according to the directions given on each bottle, will make a sufficiently strong antiseptic solution for the purpose intended. The hands should not be dried after dipping them in the antiseptic but used in their wet state. If these preparations are too expensive or cannot be procured, then Semmelweiss's method may be employed; that is, mix a little chloride-of-lime in a saucer with some cold water until it is of the thickness of

cream, then after the hands have been washed and the soap rinsed off, work the fingers about in this lime cream and rub some of it over the hands and arms, following this up by rubbing a piece of common washing soda over them also (which may impart a cool sensation).

When all this is removed by means of clean (water that has been boiled) warm water, the hands will be free from anything injurious. There is another inexpensive method that possesses some advantages over the one just described, being easier to carry out, not so unpleasant and more generally useful. It is a method employed by Dr. Douglas Stewart, of New York City, and considered to be a very valuable one. Take a clean bowl or pitcher and pour into it two pints of cold water, into this stir four teaspoonfuls of chloride-of-lime (half an ounce), then pour into the mixture two teaspoonfuls of acetic acid (four or five times the amount of strong vinegar might perhaps answer as well), and a good antiseptic solution will be made that can be used for soaking the hands in after they have been washed. A further use can be made of this antiseptic. Make as before two pints of the solution in a large jug and add to it four more pints of water; when they are mixed together a quantity

of antiseptic liquid will have been made at a cost of something less than a penny, which will not irritate the skin and can be used as an antiseptic for the body and private parts. It has the disadvantage of requiring to be made fresh every day, but any left over towards the evening could be used for soaking pieces of linen in, that may be required the next day for washing the parts when changing the discharge pads or diapers. If no antiseptic of any kind can be obtained, the washing and scrubbing of the hands and arms must be very thoroughly carried out, some paraffin added to the water will assist the soap in removing the natural grease of the skin. Germs are supposed to lurk in this grease, and it is that which necessitates the use of so much soap and water and the further use of methylated spirit or turpentine for its removal. Working the hands in mustard after they have been washed, will remove any odour from them, and as the mustard acts as an antiseptic, it may be useful in an emergency in the absence of anything better. It is needless to remark that it should be washed off again before using the hands. The most essential part of this process of cleaning the hands, is the careful and thorough scrubbing of them with good house-

hold soap and hot water and devoting plenty of time to it. As only the doctor or properly trained midwife are allowed to make an internal examination and are supposed to be conversant with the method of cleaning the hands, this detailed description may seem to be out of place or unnecessary, but the circumstances may be such that the neighbour is the only one in attendance, and although she may not make an examination, in fact should strictly avoid doing so ; she may have to remove the afterbirth from the bed, and later, perhaps, in acting as nurse, she will have to make her patient comfortable, washing and cleaning the parts and changing the diapers or discharge pads. Throughout all this there will be many chances or opportunities for her fingers to come in contact with the wounded structures of the mother ; besides every childbearing woman ought to know how to clean the hands properly even if it is only to ascertain whether those who attend upon her at her confinement both possess and put into practice that knowledge.

THE NINTH MONTH.

Probably by this time, with other inconveniences, some difficulty in breathing is experienced,

but on one morning in the first or second week of this month much surprise will be occasioned by finding that this difficulty has passed away and the breathing relieved, a sense of lightness felt, and the stomach or abdomen has become flatter. Sometimes these changes come on so suddenly as to cause a little alarm whether the condition is a right one. This alteration in the position of the child is known as the lightening or falling of the womb, and occurs a week or two earlier, and more marked in first pregnancies than in subsequent ones. As the unborn babe increases in size and fills the abdomen it encroaches on the chest causing a difficulty in breathing, but as the resistance to its encroachment in this direction increases, a less one is met with in the lower part of the mother's body and the child descends downwards a little way into the pelvis, that circle of bone I have described elsewhere. That it can do so indicates to a certain extent that this is fairly roomy and of good size. While the change in the child's position gives relief to the breathing, the greater pressure produced by it on the bladder often provokes an increased desire to pass water more frequently, and if there has been a discharge from the front passage, this discharge may become increased in quantity. All irritating discharges

from the front passage during the later months of pregnancy require medical treatment, for many a child has been blinded for life through such a discharge getting into its eyes at birth. This lightening or falling of the womb is one of the signs of approaching labour ; another sign, not often mentioned, was pointed out by the late Dr. Braxton Hicks as one he had frequently noticed, that the woman a few days before the confinement may become active and energetic and appear to be anxious to put her house in order. Some evening during the last week of pregnancy, generally between the hours of ten and twelve o'clock, a pain will be felt all at once in the lower part of the back or around the navel, seeming like an ordinary stomach ache. It soon passes off and when almost forgotten, in the half hour that perhaps has gone by, a similar pain is felt again which also subsides in the same manner as the previous one. But these pains are not to be denied, and another of the same character follows at a shorter interval but lasting a little longer, with perhaps some shooting pains down the thighs. By this time the woman will be thoroughly roused, become restless and want to walk about while the pains will be repeated at *regular* but shortening intervals. It is important to notice the regularity which

characterises them, for sometimes during this ninth month stomach-ache like pains come on and follow each other quickly but at irregular intervals, and then, like unto a small storm, pass away altogether. These are known as false labour pains and are probably due to flatulence. They often cause much excitement and alarm; nurse and doctor are hurriedly sent for only to leave again after a short time, quite unable to satisfy any questioner they may meet who has expressed an interest in knowing whether "a boy or a girl" was the result of their visit.

THE CONFINEMENT.

The character of the pains and the fact that they continue to be repeated at regular intervals justify the conclusion that labour has commenced. There are three phases or periods belonging to a confinement which are known respectively as the first, the second and the third stage of labour. The first is the preparatory stage, during which period the mouth of the womb is being dilated or opened to a width that will allow the child to pass through, and when this is completed the second stage commences. In this stage the child is caused to move and pass through the birth

canal, and when born the third stage is entered upon. It is in this, the last stage, that the afterbirth is separated from the womb and finally, when it comes away, the confinement is completed.

THE FIRST STAGE.—At the commencement of labour the lips of the womb become softened with some opening of its mouth, but not more than will admit the tip of the little finger. If the hand is placed upon the stomach when a pain comes on the womb will be felt to contract and become firm and hard. In this state of contraction it squeezes the bag of watery fluid, previously described, and so causes it to press against the mouth of the womb which, being softened, yields slightly to the pressure, opening a little and its lips becoming thinner. At each pain or contraction of the womb this process is repeated, the bag of watery fluid will bulge into the more widely opened mouth, and acting at a greater advantage still further dilate it until eventually it is sufficiently open for the passage of the child and the first stage of labour is completed. The length of this stage varies with each individual and is influenced by the waters breaking too soon (the well known dry labour), the age of the woman, and whether it is her first confinement or not.

In first labours, the process of opening the mouth of the womb completely may occupy fourteen or sixteen hours, while in other labours only half that time may be needed. The pains of this period are more annoying than severe, and are sometimes called "niggling pains." Some fortunate women scarcely feel them, while others get wearied because so little progress appears to be made; but generally these pains are quite bearable, and much ease is obtained during the intervals between them. Towards the end of this stage a little blood often appears, and is spoken of as "the show." During this period of the labour there is no occasion for a woman to strain or pull at anything when a pain comes on, for doing so only tends to tire and exhaust her, without in the least degree hastening matters. She need not keep to her bed, and, in fact, will be better for moving about, pausing, as she naturally will do, when a pain comes on. Though there may be little desire for food, some light form of nourishment should be taken, such as bread and milk, or a soft boiled egg with buttered toast, but not too much tea, while stimulants of any kind are to be avoided. When the nurse arrives and finds that labour is in progress, she will observe the character of the pains, and notice how frequently

they follow each other, and also ascertain whether there is any "show" or not. Having satisfied her mind on these matters, she will be able to judge when it may be desirable to send for the doctor. On no account is the nurse to be allowed to make an examination for the purpose of ascertaining the progress of the labour. It will be needless for the doctor to be present during the early part of the confinement, but it may be an advantage to both parties to let him know that labour has commenced, and that he will be sent for at a later period. The nurse, by means of an india-rubber syringe, *kept for this purpose only*, will wash out the lower bowel or back passage, with about two pints of soapsuds, made of warm water into which some household soap has been stirred. This she should do whether the bowels have acted freely or not, or only just before her arrival. This washing out of the bowel usually affords great comfort, and frequently shortens the time of labour by two or three hours, besides avoiding the unpleasantness of their acting just before the baby is born.

The next attention given to the patient by the nurse will be the washing of the lower part of the body. Taking a clean diaper or piece

of linen (sponges must not be used for this purpose, for they are rarely clean), soap and warm water, she should thoroughly wash the buttocks, the lower part of the back, the hips, between the thighs, the folds between the thighs and the body, the lower portion of the stomach, and the vulva or private parts. The perspiration is somewhat free during pregnancy, so in the latter part of it a similar washing of the body to this ought to be carried out two or three times a week.

THE CLEANING OF THE VULVA.—Separating the lips of the front passage, the nurse will, with a pledget of cotton wool that has been dipped into an antiseptic solution, carefully clean away any mucous or secretion that may be there, or gently wash it away with soap and water. Then, taking a larger pledget of cotton wool that has been soaking in the antiseptic solution, she inserts it between the lips of the vulva, and leaves it in that position. This cleaning of the vulva may seem to some to be an objectionable proceeding, but it is done with the object of removing any deleterious matter there may be there, which, if allowed to remain, might get on to the doctor's finger when he made an internal examination, and in that way be carried into

the front passage, to the possible injury of the patient. The wisdom of this precaution has been proved by experience. Dr. Longridge, formerly of Queen Charlotte's Lying-in Hospital, remarks: "The vulva, after being thoroughly washed, should be swabbed over with Lysol solution (an antiseptic) before an examination is made." Dr. H. R. Andrews, one of the examiners to The Central Midwives' Board, remarking on some of the predisposing causes of Puerperal Sepsis (child-bed fever), said: "Imperfect cleansing of the vulva and surrounding skin during labour.—In the condition of the vulva is to be found a frequent source of puerperal infection. However carefully the hands are sterilised (freed from germs), it is of no avail if the vulva and surrounding skin are not thoroughly cleaned. A finger is no longer aseptic (germ free) if it is introduced carelessly through a vulva which has not been rendered aseptic (cleaned)."

If it is borne in mind that the perineum is generally more or less torn at the first confinement and that this structure borders on the opening of the bowel which contains many germs that are injurious to wounds, there can be no difficulty in understanding why it is necessary to keep this part clean during labour.

It is within my own knowledge that a lady, training as a midwife at a large lying-in institution in London some time ago, was asked to examine a woman about to be confined, but this she declined to do because the vulva had not been properly cleaned. Since then, the cleaning of the vulva before an examination is made, has become a routine matter at all lying-in institutions. After all it is only a repetition of an ablution too often neglected. The woman has a right to require the doctor or midwife to properly clean their hands before they examine her, and they on their part have also a right that her person should be clean for them to examine. After dressing her patient in clean clothing for the confinement, the nurse will prepare the bed and see that there is a plentiful supply of hot water and that everything that may be required is in readiness. The trouble of taking all this care and precaution will not occupy much time, and there is plenty of that in this stage of the confinement throughout which the nurse should be bright and cheerful, and give every encouragement to her charge.

When the doctor arrives, he will probably, after a few cheering remarks and greeting, desire his patient to take to her bed (the coming of a strange doctor into the room often has the

effect of checking the pains for a time) that he may make an *external* examination. This he does by placing his hands over the abdomen while she is upon her back, and, with a gentle pressure moving them about here and there so that he can feel the child, find out how it is placed. To further assure himself of the exact position of the part that is coming first and the extent to which the mouth of the womb has opened, he may now wish to make an *internal* examination. For this to be done the patient is, in England, usually placed upon her left side somewhat across the bed, and with her buttocks close to its edge. The doctor will now clean his hands with great care, after which he may cover them with thin india-rubber gloves that have been made germ free by boiling. When he has taken his seat beside the bed, the nurse will lift the clothes sufficiently to bring the parts into view and allow of their condition being observed while, with the other hand, she will raise and support the right buttock. After dipping his hands into some antiseptic solution placed near to him, the doctor will gently hold apart with one hand the lips of the front passage and taking the other out of the antiseptic solution introduce a finger of it direct into the birth passage without the finger coming into

contact with the parts, the bedclothes or anything since it was removed from the antiseptic solution. This method of making an internal examination is in marked contrast to the one formerly adopted, when the doctor, desirous of exposing his patient as little as possible, anointed his finger with some oil or lard that had been placed in the room for that purpose, and then with more or less expertness, felt his way under the bedclothes for the entrance wherein to insert his finger; a finger which would only have been washed in the ordinary way and not cleaned with the care and in the manner that our present knowledge finds is necessary. The occasion held little reason for this false modesty, and, as we understand matters now, there were many good grounds for not exercising it. "It is the examining finger," said Semmelweiss, "that conveys the injurious matter," and what was true of it then is quite as true of it at the present time, unless the precaution of properly cleaning it beforehand is taken. While as few internal examinations as possible should be made, the method of viewing the parts occasionally, instead of groping blindly under the bedclothes, allows, towards the end of the confinement, the birth of the child to be watched and whether it results in any injury to them.

By the older blind method such injuries frequently occurred without being noticed and remained undiscovered, for at the time the woman is scarcely sensible of any pain they cause. When his examination is concluded, the doctor may encourage his patient by assuring her that everything is going on satisfactorily and after giving some instructions to the nurse, retire, within easy call, to another room. When the mouth of the womb has been opened sufficiently, the first or preparatory stage of labour will be over and the second or expulsive stage commence.

THE SECOND STAGE.—In this part of the confinement the child is moved along the birth canal or passage until it is finally born ; so the second stage is called the expulsive stage of labour. The time that it occupies is usually much shorter than that taken by the preceding stage, but its duration varies considerably and is affected by many conditions. The birth passage may be large and roomy and the child which has to pass through it may be only a small one ; or the reverse may be the case, the child large and the birth canal narrow. Further, one woman may be strong and vigorous while another may be feeble and possess little muscular power ; then again whether it is the first child

or not often makes a great difference. From all this it is easy to understand how difficult it must be for the doctor to say exactly when the baby will be born. He may say that the time will not be long or suggest that some patience will be necessary before the confinement is over. With the first child this second stage may occupy from two to four hours. The latter part of it is often prolonged by the time required for the moulding, as it is termed, of the child's head from its natural round shape to an elongated one admitting of its easier passage. In subsequent confinements the time this second stage occupies is usually much shorter—from one to three hours—but if the pains are feeble and the woman not very strong it can be much longer and yet remain natural. During this stage the patient should stay in bed though she need not keep in one position, but take any that gives her the most ease and comfort. A short sleep, even, can sometimes be obtained between the pains. The principal difference to be noticed between this stage and the one that preceded it, is the marked alteration in the character of the pains. From being teasing and annoying they have become strong and forcing. During a pain there is a desire to press against anything with the feet or to pull at something with the hands

or to place the hands firmly on the knees. The mouth will be closed (almost involuntarily), the breath held, and then the straining powers of the body are brought into action to assist the womb in moving the child downwards. Sometimes a round towel fastened to the foot of the bed is provided for the patient to pull at while at the same time she presses against something with her feet, but the hands on the knees will give sufficient support or purchase at the beginning of this stage and avoid exhausting the strength at too early a period. Confinement is a labour and often very hard work, sufficient at times to produce free perspiration ; but there is no need for any excitement and matters should be taken as calmly as possible, obtaining as much rest between the pains as can be managed. The bag of membranes may burst during one of the pains and give rise to some alarm as the liberated waters gush forth, though a knowledge of what may be expected to take place ought to prevent any being felt. Sometimes the doctor on finding that the mouth of the womb is open to its full extent will intentionally break the membranous bag, for labour generally progresses more rapidly after the waters have been liberated. After "the waters have broken," as it is termed, there is usually a pause in the frequency

of the pains, but only for them to come on again with greater force. As the labour progresses the woman feels compelled almost to use all her powers to assist the advance of the child. An aching of the back is now frequently felt, which the nurse relieves somewhat by pressing the back or rubbing it. Cramp of the leg sometimes arises and this also may be eased by rubbing the limb. As the child advances still further and presses on the bowel and the neck of the bladder, there may be a desire to pass water or a wish to empty the bowels ; these sensations are evidences of considerable progress having been made. The head of the child comes first, or as it is termed " presents " more frequently than any other part of its body, and towards the end of labour will be felt bulging the lower part of the birth passage. As a pain comes on the bulging appears to be still greater, but as the pain subsides the head seems to recede or go back again. Women are often disappointed at this and think that no progress is being made ; an observer, though, would notice that at each time this occurred some gain forwards had been obtained. The receding of the head between the pains is in reality a good sign and one of safety, for it shows that the head is not fixed or wedged fast in any way.

If it were fixed and did not recede nor go back a little when the moving force of the pain ceased, the pressure of the head upon the soft parts would soon injure them, and if it neither moved forwards nor receded, then a serious condition would be present ; one requiring skilled assistance for its relief. If the head of a newly born child is examined, the bones that form the upper part of it will be found moveable towards each other to a limited extent and allowing of a certain amount of moulding of the head to adapt it for passing out of the birth canal. It is during the time that the head comes forward and then recedes, apparently, to its former position that this moulding of it is taking place, and if the child is examined just after birth, the head will be found much elongated and quite different from the rounded form it afterwards assumes.

A knowledge of how this adaptation of Nature provides for the safety of both mother and child should lessen some of the impatience this seeming delay naturally produces. By this time the second stage will be nearing its completion, and during one of the pains the head will have advanced fully to the opening. Each pain that follows this promises to be the last, until one comes in which the woman feels

that she must cry out, as the head of the child, stretching the parts to their full extent, protrudes. The opening of the mother's mouth in giving utterance to this characteristic cry just as the child's head is passing out, acts as a kind of safety valve, and partially prevents that sudden thrust of it which might cause the soft structures around the outlet of the passage to be seriously torn.

This is the reason why, when the head of the child is about to come forth, the patient is generally recommended not to bear down too strongly, so that the soft parts may have more time to yield to the stretching, and the head pass out gradually without rending them ; but it is difficult to prevent these tears of the perineum happening. In a first confinement some tearing of it generally occurs, and the wound may extend backwards an inch or more, or even into the bowel. These tears are some of the wounds about which so much precaution is taken to prevent their being infected with putrefactive germs, for not only are they wounds, but lacerated wounds, instead of clean cuts, and made in bruised tissue belonging to an exhausted person. There is little pain felt at the time these injuries

are produced, on account of the parts being benumbed by the pressure of the child's head, and unless they are searched for by the doctor or midwife, they may escape observation. The child's head usually emerges with the face looking towards the mother's back, appearing blue and congested, as if the infant were suffocating, though it is not so in reality. The doctor will ascertain if there is any twisting of the cord around the child's neck, and if that is the case, will draw a further length of the cord down, and loosening that which encircles the neck, slip the loop over the child's head, or let the shoulders pass through it. The child's eyelids may be gently wiped with a clean piece of soft linen, moistened with a solution of boracic acid in water, and the mouth freed from any blood or mucous that may be about the lips. Soon another pain comes on, and the baby is fully born. As a rule, it promptly announces the fact by a loud cry, and for once a baby's cry becomes a welcome sound to all around. There is more meaning in this sound than reaches the ear. A good, loud, deep cry expands the infant's lungs, and fills them with air for the first time. The cry of her baby is said to act, sympathetically, I suppose, upon the mother, and cause the womb

to close more firmly, and that, when the womb is relaxed, making the baby cry lustily in its mother's hearing will induce the womb to become firm and contracted. The birth of the baby completes the second stage of labour. It is usually followed by such a sense of relief and recovery, mingled with a mother's happiness in her new possession, that the hours of pain and trial which preceded the birth are speedily forgotten, and almost forgotten, too, sometimes, is the fact that there is still another small matter of a confinement yet to be gone through before the labour is completed, that is, the expulsion of the afterbirth. The child is laid upon its side close to the mother until the cord is divided, care being taken in placing it there that none of the liquid on the bed can be drawn up into its mouth. On taking the navel string between the fingers a throbbing or beating of its blood vessels will be felt, but this soon diminishes in force, and after a few minutes ceases altogether. The cord can *now* be tied. For this purpose four strands of strong thread about sixteen inches long and knotted together at the ends, are generally used. Four of these should be prepared (in case of twins) and, after being boiled, placed in some antiseptic solution.

This precaution is taken because they are easily soiled by the fingers, and such soiling might afterwards set up inflammation of the navel. The first tie is made on the cord about two fingers' breadth from the child's body. This distance from the body is chosen because a small portion of the bowel might possibly protrude from the navel, and get included in the knot if it were tied close to the body. The knot should be tied firmly, so as not to slip afterwards when the cord shrinks.

It is usual to tie the cord a second time about two or three inches away from the first knot. In tying these knots care should be taken that the hands do not slip suddenly and drag the navel string from off the child's body. The cord between the two knots is cut with a pair of scissors which should be sharp and have the ends of the blades rounded; sharp pointed scissors are dangerous and still more so are dirty ones for they are liable to infect the navel and cause it to inflame in the same way as the soiled string, and the scissors should therefore have been boiled or soaked in some antiseptic before being used. In dividing the cord, it is better to place that portion of it between the two knots, in the hollow of the hand, the back of which is turned towards the child so as to pro-

tect it from any chance injury by the scissors. No one should be allowed to open the infant's eyes to see what colour they are for dust might get into the eyes and set up irritation, as a child just born sheds no tears by which this could be washed away. The child can now be removed, and wrapped in a piece of flannel, placed temporarily on one side for all attention must continue to be given to the mother; the child can wait but the mother must not be left.

THE THIRD STAGE.—When the child is born the third stage of labour commences. The woman can now assume any position, except the upright, that she finds comfortable or convenient. The womb, much diminished in size but containing the afterbirth, may now be felt low down in the stomach as a fairly firm body. The doctor or nurse will perhaps keep a hand placed over it so as to become aware if it relaxes too much. In about fifteen or twenty minutes a slight pain or contraction of the womb may come on and squeeze the afterbirth out into the front passage, or two or three pains may occur before this is effected. The womb then becomes smaller and rises higher in the stomach. The pains and bearing down sometimes expel this troublesome placenta out

into the bed, but more often it remains in some part of the front passage. The doctor by some skilful movement of his hand on the womb will cause the afterbirth to leave this passage, or he may find it necessary to introduce his finger or hand to effect its removal. Of course they will be clean and dipped into some antiseptic solution.

When the afterbirth comes out of the front passage the membranes attached to it trail behind. It is usual then to take it into the hands and turn it round and round upon itself so as to twist the membranes coming behind into a kind of rope, but doing this gently that they may not be torn and some portion of them left in the womb. The afterbirth and its attached membranes are then placed in a basin containing some clear water, and carefully examined to see that all has come away and none left in the womb. Where there is no doctor nor trained midwife in attendance, the afterbirth may remain in the front passage for some time without any harm arising, but should not be allowed to stay there more than two hours before skilled help is obtained to remove it. After a little time one or two sharp sudden coughs will often cause it to be dislodged. The older nurses used to give their patients snuff to

make them cough or sneeze to expel it, but no attempt to bring it away by pulling at the cord should be permitted.

THE END OF THE CONFINEMENT.—The doctor will now ascertain if there is any tearing of the perineum, and if he considers the wounds require attention, will give directions that the patient be placed upon her back across the bed with the buttocks close to the edge of it and opposite to a good light. Bending the knees the nurse will raise the legs and hold them apart so that a good view of the injuries can be obtained. If necessary the doctor will insert a few stitches and close the wounds by bringing their edges together, restoring the parts to their former appearance. Little, if any, pain will be felt beyond the slight prick of the needle, for just after a confinement these parts are not very sensitive on account of being benumbed by the pressure of the child. If these lacerations or tears are left to heal without any aid and not closed properly, a want of support may afterwards be felt with a tendency later on for the womb to come down ; while for several days after the confinement there will be a risk of deleterious matter—those germs as to which so much has been said—getting into them. Having cleaned her hands and held them in

the antiseptic solution the nurse will proceed to wash her patient. The doctor, rightly attaching some importance to this, may prefer to do the washing himself. Soaking a clean diaper in an antiseptic solution, the nurse will carefully and thoroughly wash or wipe away every smear of blood, remove the flannel petticoat, the folded blanket and also the soiled sheet, substituting a clean one for it or use the draw sheet. The placing of a binder low down around the hips and body is comforting and generally gives a feeling of support.

If there is no bleeding from the front passage the nurse will dip a clean piece of linen into an antiseptic solution and lay it over the vulva; upon this she places the discharge pad and secures it in position. The night-gown is now unrolled from under the armpits or a clean one substituted and the bed made comfortable. A good sound sleep provides the best means of recovery from the immediate effects of a confinement, so that after the mother has had a glass of warm milk, care should be taken that she is not disturbed by the baby. Following a confinement a quantity of urine is generally excreted, and therefore after an interval of a few hours the nurse should enquire if there is a desire to empty the bladder. On account of the

position in bed there may be at first some difficulty in passing water ; for this purpose the half-sitting posture is the best to assume, but it should not be maintained for more than one or two minutes. It has the advantage of allowing any discharge fluid which may have collected in the front passage to come away. The discharge pad will require renewing, not simply replacing, with the parts previously cleaned as usual. In first confinements and after the stitching of perineal wounds, there is often this difficulty of passing water, and if the placing of hot flannel over the region of the bladder does not remove it, the water must be drawn off by the doctor or some skilled person.

Before leaving the house the doctor will carefully examine the child to ascertain whether it has any defect of body, and whether there is any bleeding from the navel.

THE WASHING AND DRESSING OF THE BABY.

This apparently simple matter may be productive of much unnecessary misery to the unfortunate infant, if improperly carried out. A quantity of white greasy looking substance, that

probably protected the child's skin from the soddening effect of the fluid which surrounded it before birth, will be found on its head and body. This can be removed by smearing over it some sweet or salad oil, when it will easily come away by washing it off with simple soap, such as curd soap, and warm water. It is better not to immerse the whole body in the water but to wash parts of it at a time while supported on the knees ; of course this washing is done in a warm room but the child should not be exposed to too hot a fire. As the child's skin is delicate and sensitive, care should be taken in drying it that it is not rubbed too much, but rather to wrap the wet parts in the warm drying cloths and dry them by a kind of patting. The stump of the navel is usually wrapped in a piece of linen which has been scorched at the fire, and it is curious that, of the many old customs which formerly surrounded confinements, this is the only one having the spirit of cleanliness in it ; for the scorching of the linen goes some way towards destroying whatever infectious germs there may be upon it. The recently cut navel is liable to get infected and become inflamed while a serious illness to the child may result ; so before wrapping it up in the linen it will be better to dust it over with some mild antiseptic

drying powder, such as one composed of equal parts of powdered starch and boracic acid mixed together. Fullers earth is unsafe to use for this purpose for it may contain the germs of lock-jaw and the disease they produce has arisen from such use of it. Boracic powder is very cheap and so useful in various ways at this time that a sufficient supply of it should be obtained before the confinement. After the cord has been dressed, the dressing is kept in its place by a binder, and it is here that the child's misery often begins, for women will persistently wrap the baby's body as tightly as if the child had no more feeling than a log of wood. I have driven many miles, simply to loosen an overtight binder and give ease to a child continually crying from the distress it gave rise to. Instead of rolling the binder around the body as tightly as possible, compressing the child's soft stomach and tender ribs and restraining their movements so much that it can scarcely breathe, it should be drawn no tighter than is necessary to keep the dressing in its place for the few days it is required. Another form of torture, practised by the old nurses, was the pulling of the infant's nipples to break what they termed "the nipple strings." Again I have seen the corner of a hard towel twisted and afterwards thrust into

the child's ears for the purpose of drying them. These highly sensitive and delicate organs may be permanently injured by such barbarous treatment; a little absorbent cotton wool would remove any water that might get into them, though this seldom occurs. Great care is necessary in washing the eyelids not to let dirty water get in between them; they merely want wiping with cotton wool moistened with boracic acid lotion. During the first week it is not necessary to wash the child more often than every other day, as a doctor justly remarks: "There can be too much washing of the baby." The diapers should be of some soft material that will not irritate the tender skin and care should be taken to remove all the soda from them after washing, for that also is irritating. The clothing should be warm and arranged loosely. The lower part of the body, stomach and legs need to be kept warm, for the large prominent stomach, legs and feet, form together the greater part of the surface of the infant's whole body so that too much exposure of them will easily chill the child. It may seem to be ridiculous, but by causing it to do things at regular intervals of time, a child's education can commence on the day it is born. After the mother has had some six or eight hours' sleep,

the baby may be put to the breast for not longer than a quarter of an hour. It will obtain very little from the breasts at first, but what it does receive will act upon it as an aperient. If it appears needful, give the child nothing but a few teaspoonfuls of *unsweetened* warm water; nature has not intended it to have more food for the first day or two than the mother's breasts provide. At this age it can be nursed about once in every four hours. The suckling of the infant promotes the secretion of milk and is said to assist the firmer closing of the mother's womb. The child should occupy a crib beside the mother's bed, but if its crying disturbs her it should be removed somewhat away from her hearing and the cause of its crying ascertained, for a healthy babe cries but little, and certainly not without good reason.

THE INFANT.

At the end of two or three days the cord will have shrunk and become blackened, and when it falls off, which it generally does on the fifth day, the stump should be dusted with some powdered boracic acid until it has quite healed. The motions for the first day or two are greenish

in colour, but by the fifth or the seventh day they usually become yellow in appearance ; and of these three or more are passed in the twenty-four hours. Their odour should not be offensive, nor should they contain any white lumps or curds. The child's stomach at birth is little larger than a good sized fig and holds about an ounce and a half of fluid, but by the end of six months, will have so much increased in capacity that it can contain six ounces of milk. The mother generally secretes milk in quantity according to the wants of her child, and this for the first week or two is about one pint daily.

Although babies are easily injured they are very tenacious of life, and general recovery quickly when the cause of their ailment is removed.

THE LYING-IN PERIOD.

Women who have gone through a natural labour conducted on the principle of cleanliness not only enjoy safety but generally feel so well afterwards that they are apt to become impatient at the length of the lying-in period. The ten or fourteen days to which it usually extends are neither for rest nor recovery, but to give a favourable opportunity to the enlarged organs,

such as the womb, for them to enter unchecked upon the process of restoration to their former state. This process (known to doctors as involution) is a very important one, and any hindrance to it in its early stages, such as getting up too soon, feverishness arising from any cause, such as not changing the diapers and neglecting to clean the parts properly afterwards, may prevent its completion at a later date. For some days after confinement the walls of the abdomen are large and relaxed, the womb heavy and the structures that usually support it soft and yielding. This general condition would readily allow the womb to be displaced, were the woman to exert herself or remain upright for any length of time, and any alteration in the position, or settling down of the womb at this period would cause its congestion and hinder it from returning to its former size.

A woman whose womb three or four months after confinement has not subsided to nearly its ordinary state, may for a long time afterwards feel a weakness and heaviness and may possibly become barren. Time after time women come to doctors and complain "that they have never been well since their last baby was born."

The womb at the end of ten or twelve days after labour can seldom be felt by the hand

placed upon the stomach, but nevertheless it will be some five or six weeks longer before it is restored to its ordinary size. Until that period of time therefore, has elapsed, it will be well to avoid any undue excitement or over exertion. From what has been said on the subject it seems evident that the lying-in period should, when circumstances permit, extend to fourteen days or longer.

AFTER PAINS.—These are troublesome pains that sometimes come on about eight or ten hours after the labour is over, and give the impression that the womb is trying to get rid of something, such as a small clot. They seldom follow a first confinement, but women who have had several children are often very much annoyed by them though it is usual for the pains to subside after a few hours. If they continue and are distressing, hot flannel placed over the stomach may give relief, and if they are associated with constipation a dose of castor oil sometimes takes them away, but no soothing medicine should be given unless ordered by a doctor.

The discharges for the first three or four days are of a red colour, and get paler and paler, then brown for a few days, and by the tenth are greyish or with little if any colour. These

changes in the appearance of the discharges are familiar to the nurse, but if the red colour continues for more than the usual time the attention of the doctor should be drawn to the fact, for it generally means that matters are not as they should be. For the first three days the diapers or discharge pads should be changed about every three or four hours, and after that every six hours may be often enough. Care must be taken when changing these pads that the parts are properly cleaned before a fresh one is applied to them. To half a pint of water add a teaspoonful of one of the ordinary antiseptics, either Lysol, Cyllin, Izal or Lysoform, which will make an antiseptic solution of about twice the usual strength. In this solution soak two pieces of old but clean linen, eight to ten inches by five, will be found a convenient size, for the purpose. When it is desirable to change the pads and wash the parts, add another half pint of hot water to the solution and divide the whole into two portions with one of the pieces of linen in each basin. One of these portions can be used to wash the parts with, and when that has been done the piece of linen in the other portion is taken out, squeezed almost dry and applied to them. Over this is placed the fresh discharge pad secured in its place in the

usual way. The trouble of taking these precautions will be scarcely more than there was in writing a description of the method. It will protect the parts, and any wounds they may have received, from the possibility of some injurious germs being on the discharge pads. The hands, as a matter of course, should be cleaned before carrying out this office, see rule 3 that midwives have to observe. In cleaning the parts care should be taken to wash towards the back passage and not the reverse way, for the bowel contains many germs and some may be collected around its opening.

DIET.—As the lying-in woman is not an invalid, there is no reason for her being kept to any special diet, beyond a consideration for the circumstances under which she is placed, which are, no exercise, rest in bed, and the nursing of the baby. Generally for the first few days there is little inclination to eat, but some light, easily digested food should be taken, such as toast and milk, buttered toast, and a soft boiled egg, bread and butter, weak tea or cocoa, and milk puddings of various kinds.

The time-honoured diet in the early days of this period, of porridge or gruel, has little to recommend it beyond simplicity and the

stimulus it may give to the bowels, and as it is poor food in itself, should not form the limit of choice. Later, when the appetite returns, any food that may be desired within reason may be taken. Stimulants of every kind are to be avoided; besides being injurious, they lessen the nutritive value of the milk secreted. The best nursing stout is cow's milk!

CONSTIPATION.—This is one of the troubles besetting the lying-in period, and arises from the absence of exercise, and the laxity of the abdominal walls, though much of it may be due to neglect of the bowels during pregnancy. It is usual to give an aperient about the third day, but there is no good reason for not giving it on the second, such as a rhubarb and blue pill, followed early the next morning by a dose of castor oil. If a doctor is in attendance, of course, he will prescribe what is necessary, and before the aperient acts, may wish to have the lower bowel washed out, that any hard matter collected there may be softened and removed without causing pain and disturbing the parts. This washing out of the bowel should only be done by a competent person who can clean her hands properly. The sitting or half-sitting

posture may be adopted when using the bed-pan, but should not be maintained for many minutes at a time.

THE FILLING OF THE BREASTS WITH MILK.

This generally takes place at the end of the second day, except after first confinements, when it is usually a day later. As it is a natural process, there should be no disturbance to the health attending it, and therefore, any feverishness felt about this time must be attributed to some other cause (constipation, sometimes). I have already explained that there is no such disease as milk fever. If there is a marked deficiency in the secretion of milk by the end of the third day, the nurse ought to note the temperature and count the pulse (a careful nurse will do this every day during the lying-in period,) for the suppression of milk frequently means some disturbance to health.

INFLAMED BREASTS AND SORE NIPPLES.

These are troubles that more often follow a first confinement than subsequent labours, and generally arise from inattention to the breasts before the birth of the baby, and from neglecting to clean and dry the nipples after suckling.

The mother should be careful to keep her own hands clean, for there will be frequent fingering of the breasts throughout the day. The breasts ought to be washed with simple soap and warm water, then bathed with boracic lotion (a teaspoonful of boracic acid in a pint of warm water), and carefully dried, dusting them over afterwards with powdered boracic acid. After the baby has had its meal, the nipples are to be washed with the boric lotion again, carefully dried, and dusted with the powder as before. In nursing the infant, the mother should so place herself that it has no difficulty in finding the nipple, nor any trouble in holding it between its lips when found, otherwise the baby, in its eagerness to keep a good hold of it, may grip it firmly between its gums and perhaps injure it. Once a sore or crack has been produced, great care will be required to prevent dirt or any injurious matter getting into it and setting up inflammation, with possibly the formation of an abscess. If a sore or crack is formed, a breast shield will be needed to protect it from the baby's lips, and the sore must be dressed with boracic acid powder. Rest for it to heal can be given by using the other breast only when nursing. The infant should be removed from the breast at the end

of ten or fifteen minutes, and never allowed to go to sleep with the nipple in its mouth. An abscess of the breast is so painful, and takes so long to heal that it is worth while taking any amount of trouble to prevent one forming. Much method will be needed, and some firmness required to properly manage the nursing of the baby. The mother should divide the day into so many distinct times for feeding her infant, and so arrange them that by missing one feed at night, she may give herself at least five hours' unbroken sleep. If she nurses the child every time that it cries, the little tyrant will soon make her life a burden to her. A baby quickly responds to method, and soon forms the habit of doing a thing at a certain time. Before it is given the breast it should be held out to pass water, cleaned, and a napkin re-applied. If this is done regularly, the little one will soon, though unknowingly, do what is required of it.

Allowed at first to take milk from both breasts, the child should afterwards be fed alternately from one breast and then from the other at the next time of nursing.

GENERAL REMARKS ON THE LYING-IN PERIOD.

If a woman eats well and sleeps well during this period (which should not be less than fourteen days) she may be contented with her condition. If the discharges become red in colour again or have any other special colour at the end of fourteen days, the lying-in should be continued. If the discharges become offensive, a doctor's attention should be drawn to the fact.

As excitement sometimes brings back the colour to the discharges, any form of it should be avoided and as few visitors as possible admitted to the lying-in chamber. The admiring of the baby by relatives and friends should not, for this reason, take place in the mother's room. On account of the womb being so liable to get displaced after a confinement, a doctor will sometimes wish to examine its condition at the end of the month, for any alteration in its position can then be more easily corrected.

If a womb gets out of place after a confinement and the position is not rectified, it will be very much hindered from resuming its former size.

The loss of a few ounces of blood when the afterbirth comes away is natural to every labour, and if the woman is healthy and strong with the

third stage of her confinement properly managed, this amount is seldom exceeded. In first labours bleeding, as a serious trouble, is not often met with nor is it common in subsequent ones ; but if a woman's health has become enfeebled from any cause and the womb weakened by several pregnancies following each other too quickly, then a greater loss of blood than usual may follow the confinement. If in these circumstances the labour has been a rapid or long and tedious one, causing exhaustion, the quantity of blood lost may be sufficient to involve life. It is the tendency towards bleeding which these conditions develop that makes it so necessary for the third stage of labour to be managed with great care. If a doctor is in attendance he will not hurry the removal of the afterbirth, but endeavour to give the womb as much rest as possible so that it may recover some of its strength. Placing his hand on the stomach over the womb, he will feel how it is behaving and notice when it attempts to expel the afterbirth. He may then, but not before, grasp the womb and cause the placenta to pass out of the front passage. During the removal of it and the membranes, he will direct the nurse to keep her hand upon the stomach and let him know at once if the womb gets soft again. Probably he will give his

patient some medicine possessing a property which will cause the womb to become firm and contracted. He may remain in the house an hour or two after the confinement is over, until satisfied that when the womb relaxes no blood collects within it nor comes away from the front passage, and, what is most important, that the pulse remains quiet and steady; he can then safely leave. Occasionally it happens that the exhaustion is too great for the womb unaided to recover its power. The womb remains toneless and contracts but feebly, and when the afterbirth comes away or it may be an hour afterwards, it relaxes so much that blood flows freely or gushes forth in such a manner and quantity, that the word flooding has been used to describe it. If the doctor is present, he will employ suitable measures to stop the bleeding, but in his absence it seems almost needless to point out that the first thing to be done is to secure his assistance as promptly as possible. This flooding is naturally very alarming to all present but if they wish to be of any assistance to the woman in her extremity, they must control their feelings and act at once for every moment gained will now be of value. While the messenger is on the way to the doctor, some one with a hand upon the stomach should rub

well over the region of the womb, or, that failing, press firmly low down in the same region until there seems to be little between their hand and the woman's backbone. In this way they may succeed in pressing upon the large vessels that supply the womb with blood and check the bleeding. As it is very tiring to keep up this pressure for more than a few minutes another person should be in readiness to take the place of the first. A wineglassful of vinegar, swallowed at once, sometimes checks an ordinary bleeding, but in the case of serious flooding it is doubtful if it will have that effect, though it may be tried. In the meantime procure some ice if possible and have some hot water got ready. If very much blood has been lost and life is drifting away, the holding up of both legs may furnish sufficient to keep the vital organs going a little longer and give, maybe, just the requisite time for the doctor to reach the house. The holding up of the legs should only be done when it becomes evident that the patient will otherwise soon die as it may add to the bleeding and deprive the doctor of a valuable resource when he arrives. Let there be no crowding around the patient, but open the windows and keep the air about her both cool and fresh. This dreaded bleeding is

not of frequent occurrence and might be made still less so if women would take every care during the time they are with child to improve their health and strength. At some Maternities, feeble and needy women are admitted into the wards a month or two before the expected confinement, so that they may be nourished and strengthened sufficiently for the trial of giving birth to a child and any consequence of the nature of flooding avoided.

BLEEDING DUE TO MISPLACED AFTERBIRTH.

This has already been alluded to under the heading "The Disorders of Pregnancy." It is a serious complication of labour, and directly this is recognised by the midwife it will be necessary for her to call in medical assistance. The patient must be kept quiet and avoid straining until the doctor arrives. The bleeding is sometimes serious and there is more than ordinary danger of contracting child-bed fever.

PROLONGED LABOUR.

It is not always easy for an unskilled observer to distinguish between a tardy labour, due simply to a general feebleness of the powers and a

retarded one, due to some obstruction. The first stage of labour can continue for a long time without much danger being incurred, but if the pains of this stage change into the forcing and expulsive pains of that of the second, without effecting any advance of the child, then a serious condition may soon develop. No one must be allowed to make an internal examination, except a doctor or properly trained midwife,—with antiseptically cleaned hands—to ascertain if the child advances during a pain. The difficulty may be brought about by the child's head being too large or in a wrong position, or on account of the passage of the mother being too small, or that the child is placed crossways in the womb. If not relieved, the womb gradually gets into a state of hardness without relaxing again in its usual way, and the woman becomes very restless, feverish and evidently much distressed; but help ought to be obtained for her long before she gets into that condition. The doctor will employ such means as he deems necessary to terminate the confinement.

One of the means frequently employed to give assistance in obstructed labour is the use of forceps, often spoken of in a general way as “the use of instruments.” These forceps or instruments have been of immense value to

women, and their employment has saved many of their lives and greatly relieved the distress of labour. There is no need to hold them in any dread, for when properly used with all antiseptic precautions they cause little or no pain, while they often terminate a period of suffering. It is the experience of many doctors that if a woman has been helped in one of her confinements by the use of forceps, she will ask for them to be used again though there may not be sufficient reason for their employment. Much of the distress and danger arising from a prolonged labour might be avoided if the woman would ascertain before her first confinement whether her pelvis—the hard passage—were sufficiently roomy for the birth of a child without experiencing more than ordinary difficulty.

DISORDERS THAT MAY FOLLOW A NATURAL LABOUR.

These differ from the disorders due to pregnancy in an important particular, namely, that nearly all of them can be prevented. They generally arise from not properly carrying out some of the principles of the Gospel of Cleanliness. The fault may be due to a want of

knowledge of these principles, or to possessing that knowledge and not making use of it, or to something connected with the surrounding circumstances that prevents their proper application being maintained.

MILK FEVER.—The breasts should be full of milk at the end of the second or third day after confinement ; and about this time a feverishness with headache sometimes sets in. The older nurses would call the disturbance “milk fever,” and consider it to be a matter of little importance. The filling of the breasts with milk is natural and will not of itself cause feverishness and, as mentioned before, there is no such disease as milk fever. The derangement may be due to constipation, but a state of feverishness felt at this time is generally the result of blood poisoning. It may be only a mild form of it and caused perhaps by a blood clot or by a small piece of the membranes remaining in the womb, quickly subsiding when the cause is removed ; on the other hand it may be a serious form and the commencement of child-bed fever. In any case a feverishness arising a few days after the confinement, especially if it is associated with pain felt on pressing over the lower part of the stomach, that is the womb, is a matter of sufficient importance to require medical atten-

tion. Child-bed fever is much more amenable to treatment when attended to in its early stages, than afterwards.

WHITE LEG.—The condition known by this name may arise a short time after confinement, or as late as three weeks, and is now considered to be due to a form of blood-poisoning. One or both legs may be affected, but more frequently the left is the one attacked. The whole or part of the limb becomes enlarged—sometimes enormously so—firm and white, hence the name. It may be some months before the swelling finally subsides, and a long time, even a year, often elapses ere the stiffness leaves the leg, for the blood vessels may be seriously obstructed. It usually requires medical treatment.

CHILD-BED FEVER OR PUERPERAL SEPTICÆMIA.

This disease has been associated with childbirth as one of its perils from time immemorial, or in fact, one may say, since man was born of woman. It was alluded to by Hippocrates about four hundred years before the birth of Christ, as being due to putrid discharges from the womb. Although it is termed a fever, it is not a fever in the sense that scarlatina is considered as such, but is nothing more nor

less than a form of local wound poisoning in the beginning, setting up later a general form of blood-poisoning, which seriously affects the whole system. The infection may enter the system at the exposed surface of the wall of the womb where the afterbirth was placed, or by the wounds produced in the soft parts of the mother as the child passed through the birth canal. In first confinements, these parts are more rigid and less yielding than in subsequent labours, and therefore we find that they are then more frequently torn. In fact, the perineum is always more or less torn at a first labour. This greater liability to wounds doubtless explains why women in their first confinements are more frequently attacked by child-bed fever than are those not in their first labour, and who may have had several children. A woman, though, who has just given birth to a child, whether it is the first or the fifteenth, is always a wounded as well as an exhausted woman, and in our care of her must be considered as such. The woman may be young, strong and healthy, the labour simple and natural, while apparently all is promising well; but two or three days after the confinement it is found that the breasts do not fill with milk, and the discharges become scanty and some-

times offensive. She complains of headache, of feeling hot and feverish, with a tenderness over the lower part of her body. Sometimes there is a shivering, or she may not complain of anything, but her face has a shrunken appearance, and her pulse is beating quickly. The scanty discharges and suppression of the flow of milk are significant signs of the commencement of the disease, but the woman's general condition will show that she is seriously ill, though she may be composed and make little complaint. The bringing forth of children is a natural function, and there can be nothing sadder to see than a healthy young woman, in all the happiness of motherhood and joy in possessing a beautiful baby, become a victim to this dire disease, and to reflect that, if proper antiseptic precautions had been taken at confinement, her life, in all probability, would not have been endangered.

SOME INTERESTING FACTS ABOUT INFANTS.

After birth a very great change takes place in the conditions of a child's life. Previously dependent on the mother for the oxygenation or the refreshing of its blood, its own lungs

have now to carry out this process. Instead of receiving nourishment from her circulation (through the agency of the placenta), the child has now to take food through its mouth, which its own stomach has to digest for the support of its body ; while the child's kidneys, skin and bowels commence their work of excreting the various waste products that are formed. The child made movements before it was born, and after birth it continues to make movements which have no particular purpose in them, though they improve the circulation and promote the growth of the muscles. These movements should be encouraged by gentle handling or stroking (or pawing, as some describe it) the infant, "The infant who kicks freely when he is awake," says Dr. Eric Pritchard, "is more likely to rest peacefully when he is asleep."

As might be expected, infants vary in size, and a child may be small, yet well formed, while another may be large, and neither healthy nor well formed. It may be from six to seven to eight pounds in weight, and the circumference of the head should be about the same as that of the chest. This may be twelve or thirteen inches. During the first few months of its existence, the child seems to pass its time

principally in feeding when awake, and sleeping when not feeding. Before birth the limbs were, in a sense, folded on its body, the arms on the chest, and the legs bent over the abdomen. For some time after birth the legs retain this bent or bowed appearance, and when this is very marked, it may give rise to the idea that the legs are deformed, but they will get straighter as they grow longer, and their muscles become larger and firmer.

The fine downy hair which covered the child's body at birth will soon disappear and be replaced by more permanent hair. From the fourth or fifth day up to six weeks one child out of every three will be found to have somewhat large breasts which, whether male or female, may contain some milk known as "witches milk". If left alone the milk will disappear and the breasts subside, but if the nurse is allowed to pull at them and break what she calls "the nipple strings" inflammation and serious injury may result.

From the first a child will show that it possesses great power of clinging to anything with its hands, grasping, it is said, with sufficient strength to sustain its own weight. Possibly this may be a primitive endowment so that it shall instinctively cling to its mother when fleeing

from danger. An infant will recognise light soon after birth and by the end of the month be attracted by anything that glitters, but it will be nearly three months before it recognises its mother or nurse, though earlier than this a stranger will have much greater difficulty in putting it to sleep than either of those two. The power of winking or blinking does not come until about the end of the second month nor until then does the child shed tears, so that up to that time it will be very dependent upon those about it to protect its eyes from injury and to prevent dust or dirt getting into them. Its hearing powers are not usually developed until after the second week of birth, but it will be affected by the jar of a heavy footfall or of a weight thrown upon the floor. If at the end of the month a child takes no notice of any sound, some condition of the brain may be suspected as the cause of the deafness.

Between the fourth and fifth month, sometimes earlier, the child will be able to hold its head up and by the end of the year to stand on its legs without support. The diamond shaped space above the forehead, where the bones of the head have not joined each other, should gradually get smaller and smaller and by the end of the second year become closed. If this

space is slow in closing and the child has a tendency to perspire about the head, the commencement of Rickets may be suspected.

Habits can be formed, as already mentioned, soon after the child is born; such as that of passing a motion or of voiding water when taken up and held out in a certain attitude, also that of taking food at regular intervals. Bad habits also can be easily established. A child that is neglected and left in a dirty condition will soon become accustomed to the inconvenience, whereas one, used to being kept clean, would cry and show its distress in various ways if the napkins were left unchanged for any length of time. Healthy babies are happy and do not want soothing nor to be tossed up and down, while rocking in a cradle is quite unnecessary for them and far from being beneficial. Infants require many hours sleep, not in a close hot bed with their parents, but in a crib apart.

THE ERUPTION OF THE TEETH OR DENTITION.

At the seventh or eighth month the first pair of teeth should make their appearance in the middle of the lower jaw, and in a month after this two more should appear in the upper jaw,

to these two more ought to be added within a week or so. At the end of the year there should be two more in the lower jaw as well as a pair of side teeth in both jaws, and by the end of two years and a half, not later than three years, the complete set of temporary teeth, twenty in number, ought to be seen. Teething is a natural process and if the mother has taken good care of her health during pregnancy and suckled the child since birth, the "cutting" of its teeth should produce little disturbance. "The health of the infant both before and after birth undoubtedly has its effects on the teeth, including the permanent as well as the temporary set," remarked the late Dr. Ashby. This refers more to the defective structure of the teeth than to their eruption, but ill-health will delay their appearance. If a child has been so unfortunate as to be bottle fed instead of being reared by breast milk then not only will there be delay in cutting its teeth but there will, in all probability, be some difficulty; neither will the teeth be strong but prone to early decay.

Decay of the temporary or milk teeth is a very common trouble in childhood and no doubt this condition of the mouth leads to much ill health. Not only does bottle feeding or artificial rearing of infants affect the milk teeth, but it is

said to have an influence over the permanent teeth rendering them liable to premature decay. Nature generally exacts a penalty for any infringement of her laws, and that of a mother neglecting to nurse her offspring forms no exception to the rule. The suckling of an infant for the first three months has, irrespective of the teeth, a very important bearing on its health, and moreover this act has, probably, some influence in restoring to their former size the structures of the mother which have been enlarged by pregnancy. Therefore, from selfish motives alone, she should at least give this amount of motherly care to her babe, and whether she will continue to nurse the infant until the usual time of weaning must be left to her own sense of what is due to the child she has brought into the world. Well might some children exclaim that it was a pity they had been born, deprived of their birthright at the beginning of their career, a cow supplying them with a sustenance their own mother refuses to yield to their natural wants !

WEANING.

Weaning should be gradual and commence about the eighth month but, if possible, so

arranged that it does not terminate during the late summer months of the year when diarrhœa among infants is generally prevalent. It may be begun earlier than the eighth month or the breast feeding continued longer than the ninth so as to avoid this period of the year when the child is taken from the breast. It is usual to begin with giving one or two feeds daily of cow's milk diluted with an equal quantity of water sweetened (if possible with sugar of milk) and to which some cream has been added. The curds of cow's milk are so much heavier and closer than those of human milk that unless great care is taken to have it pure and diluted properly, the change of diet will cause the child to have some stomach disturbance. A pinch of carbonate of soda added to the feed will make it easier to digest, or a few grains of citrate of soda may be used with, perhaps, a better effect. Sometimes barley water or lime water are used to dilute the milk instead of plain water.

The child may object at first to this change in its diet and refuse to take it, but this difficulty is generally overcome by depriving it of a breast feed and allowing it to get hungry. Feeding with a spoon is the cleanest and best method, but if a bottle is used let it be a plain, simple,

boat shaped one requiring only a teat, for it is impossible to keep clean the tubes of feeding bottles. The tubes become infested with germs which quickly attack the next feed placed in the bottle and as a consequence the child will be fed with impure instead of pure milk. The bottles should be kept scrupulously clean, and the feed not left in them for more than twenty minutes. The feeding of infants and the rearing of children is a matter quite beyond the scope of this book and cannot be dealt with properly by a few remarks. It is a very important subject and for a mother's happiness and the future welfare of her children I would strongly recommend her to be guided by the information contained in the many excellent books which have been written on the matter, such as :—

The Care and Feeding of Children, by Dr. Holt.

Infancy, edited by Dr. T. N. Kelynack.

Health in the Nursery, by Dr. Henry Ashby.



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